Research Paper

**Bridging Digital Divide For Rural Youth:
An Experience from Computer Literacy
Programme in Bangladesh**

Ashirul Amin

40001

D.Net

Research Paper Series   **40001**

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Development Research Network

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About D.Net

D.Net – Development Research Network is a not-for-profit research institution in Bangladesh, established in 2001. D.Net's vision is a society where information and knowledge facilitates all stakeholders' participation in generation of wealth and its equitable distribution for poverty alleviation. Its mission is to become a premier organisation in Bangladesh and beyond by undertaking research and various action programmes in the areas, where information and knowledge can contribute to poverty alleviation, economic growth and peace.

During initial years of activities, D.Net's main focus was research on *Information and Communication Technology (ICT)* for Development. D.Net's in-depth research in the area of ICTs for poverty alleviation has drawn attention of stakeholders not only in Bangladesh, but also across the globe.

Under its Mission 2010, D.Net's five year strategic plan, D.Net conducts research and implements important action programmes primarily in six thematic areas:

- Access to Information and Knowledge
- Enhancing Business Competitiveness for Economic Growth
- Governance and Human Rights
- Human Resource Development
- Institutional Capacity Development
- Economic and Development Policy Research

D.Net also undertakes policy influencing activities, for bringing burning issues before the policy makers and stakeholders to create awareness and to take proper actions.

D.Net has started to play a visible role in the research arena within the national boundary and in South Asia through involvement with BRAC, SAPANA, CENTAD, Sarvodoya and ICRIER. It has also gone beyond South Asia through telecentre.org, Canada; ICTSD, Switzerland; IKED, Sweden; ADB Institute, Japan; and ELDIS, UK. D.Net is a member of Global Knowledge Partnership (GKP), One World South Asia, and PAN Asia Network of IDRC.

D.Net received the *Global Gender and ICT Award 2005*, at the *World Summit on the Information Society* for its innovation – linking new ICT mobile telecommunication for improving access to livelihood information by the poor people, particularly women and the handicapped, through the introduction of the "mobile lady".

About the Series

The objective of the research paper series is to bring important issues to the readers on various topics of public domain, based on the findings, observations and insights revealed from D.Net's in house research activities and action programmes.

This research paper is an analysis prepared under Theme 4: Human Resource Development

This study throws light on the underprivileged young computer learners in the rural areas and how they have successfully managed not only to gain adequate knowledge but also to utilise the learnt skills to gain employment in selected areas. Through the CLP Programme many students, teachers, parents and members of the community have achieved a positive impact which has changed their lives in many constructive ways.

D.Net believes that this publication will meet the demand of policy makers, researchers, academics and activists for analysis on the mentioned topic. Readers are most welcome to send their queries, comments, criticism and suggestions for further improvement of D.Net's publications.

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List of Abbreviations:

CLC	–	**Computer Literacy Centre**
CLP	–	**Computer Literacy Programme**
D.Net	–	**Development Research Network**
FGD	–	**Focus Group Discussion**
HSC	–	**Higher Secondary Certificate**
SSC	–	**Secondary School Certificate**
VAB-NJ	–	**New Jersey chapter of the Volunteers Association for Bangladesh**

Foreword

As of October 2006, Computer Learning Centres (CLCs) managed by D.Net through its Computer Literacy Programme (CLP) and sponsored by the New Jersey chapter of the Volunteers Association for Bangladesh (VAB-NJ) have graduated over 5000 students from 40 schools over a course of 18 months. These CLCs promote computer literacy and usage of computers among the underprivileged youth in Bangladesh. Through this programme we also hope to empower them to take advantage of the many opportunities made possible by information and communication technologies (ICTs).

The impact of the CLP on the lives of the students, teachers and institutions that host the CLCs has been consistently positive. Students have successfully overcome the "fear factor" associated with computers, and have been able to utilise their computer skills to successfully seek employment. Many have been motivated to pursue advanced studies in computer science. Teachers attest to the interest of students, and note the heightened awareness of the importance of computers in today's world. Schools have increased the efficiency of their operational activities, and some CLCs also function as youth development centres.

During the last two years, we have created a mature programme management and operations capability on the ground, a strong, proven basic curriculum, and well-functioning computer laboratories. D.Net and VAB-NJ now feel it is time to assess the impact of CLCs on students who participate in our CLP.

This is why we are delighted to be releasing this report.
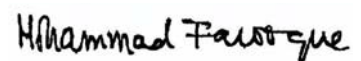
The report presents a unique insight into the perceptions and attitudes of students who are involved with the CLP. There are a number of findings that are particularly important, such as those that relate to the impact of the CLP on academic decisions, its effect on the interactions among students, and the variation of responses based on the gender of the student.

We would like to thank everyone in D.Net who participated in conducting of the surveys, the school administration, especially CLP teachers, for arranging for the students to be available to talk to us and sharing their valuable experiences, the students for being patient and candid, the head teachers for their cooperation in accommodating our study, the guardians for being willing to share their experience, Ajoy Kumar Bose for taking care of the painstaking logistics, Abul Kalam Azad for liaising with the CLC schools, Ashirul Amin for the design, coordination and analysis of the study, and last but definitely not the least, VAB-NJ, without whose sponsorship none of this would be possible.

D.Net conducted this study both as an important monitoring and evaluation exercise and as a precursor to consider implementing value-added components. I believe the information in this report will be useful as we develop new strategies and approaches to make the CLP more appropriate, useful and successful, in accordance with the recently adopted Mission 2010.

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Chapter 1: Background

i. Introduction:

As of October 2006, D.Net's Computer Learning Centres (CLCs) have graduated over 5163 students over a course of eighteen months through its Computer Literacy Programme (CLP). These CLCs promote knowledge and usage of computers among the underprivileged youth in Bangladesh, and in doing so empower them to utilise the myriad of opportunities afforded by information and communication technologies (ICTs) for development activities in their respective communities.

The impact of D.Net's CLP on the lives of the students, teachers and institutions that host CLCs has consistently been positive. Students score have been significantly higher in school curriculum based on computer science courses, they have been able to leverage their computer skills to successfully seek employment, and many have been motivated to pursue advanced studies in computer science. Teachers attest to the interest of students, and note the heightened awareness of the importance of computers in today's world. Schools have increased the efficiency of their operational activities, and some CLCs also function as youth development centres.

Given the existence of a mature programme management and operations capability on ground, a strong, proven basic curriculum, and well-functioning computer laboratories; D.Net and the New Jersey chapter of the Volunteers Association for Bangladesh (VAB-NJ) feel it is time to evaluate the impact of CLCs as a precursor to consider implementing value-added components.

The avenues for possible impacts are varied, and many. This study will focus on the overall impact of CLCs and the CLP course on the perceptions, attitudes and decision making processes for students, and the assessment of this impact by teachers, head teachers and guardians.

ii. The Concept:

VAB-NJ conceptualised the Computer Literacy Programme as an initiative through which CLCs would be established at educational institutions throughout Bangladesh to help underprivileged youths learn computer usage. The CLP is a complete package which includes the establishment of a computer lab at each CLC, development of a structured hands-on curriculum, development of training manuals for both teachers and students, creation of a pool of trained teachers, and providing the required technical support and monitoring to ensure smooth operation of the computer labs. Each computer lab is equipped with a minimum of four computers, one printer, and necessary voltage regulator/stabilisers.

D.Net implemented this vision. The on-the-ground tasks include site selection for CLCs, developing curricula, preparing instruction manuals, training the teachers, supervising the smooth operation of the centres, and technical support and maintenance. D.Net has the technical expertise, innovative ideas for implementation, and the necessary motivation. VAB-NJ brought in the needed resources, and D.Net has shared a portion of programme implementation costs despite resource constraints.

The schools have to provide space and furniture for the lab, mobilise the teachers, students and the community, and manage the centres themselves.

CLCs have been successfully conducting the CLP course as a result of the synergy created by the effective mobilisation of resources through this three-way partnership.

iii. Current Status:

The following figures will give a snapshot of the current status of the CLP. They are current as of October 2006.

Number of schools   : 40
Number of teachers   : 97

Cumulative number of students enrolled   : 5448
Number of batches currently in session   : 40
Cumulative number of students graduated : 5163

Enrollment and Graduate (Cumulative), 2005-2006
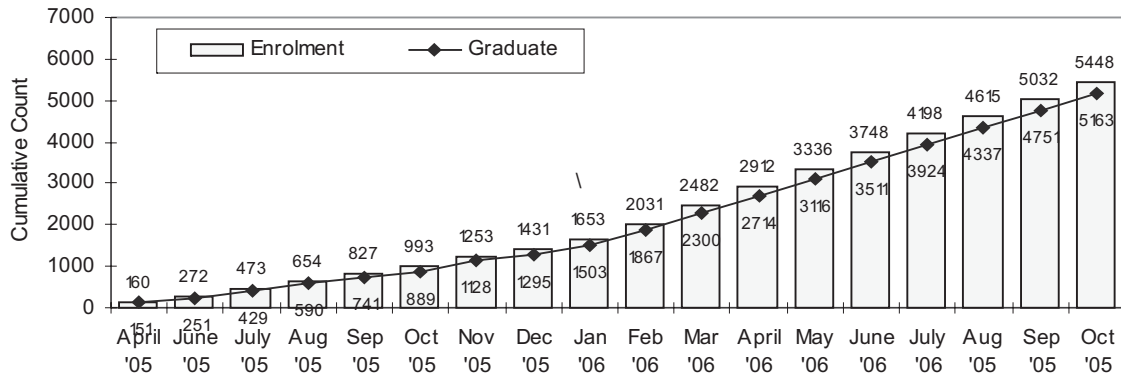
Graph 1. Cumulative enrollment and graduation from the CLCs

Of the 40 schools that host CLCs, 4 began in March 2005, 3 in April 2005, 13 in June 2005, 12 in February, 4 in March and 4 in June 2006.

5 of these schools are only for girls, and the rest are co-educational. 11 of them can be considered to be urban, being located in a city or town, and the rest can be considered rural.

37 CLCs are educational institution based, 2 are community based, and 1 is library based.

The CLCs are geographically distributed across Bangladesh, spread across 22 out of Bangladesh's 64 districts. (See Appendix A for geographical distribution of CLCs.)

iv. Methodology:

10 CLC-equipped schools were chosen for this study:

Name of School	Programme Starting Date	Type of Centre	Location	Location Type	Control
Bagerhat Bahumukhi Uchcho Biddalaya	April '05	Co-education	Bagerhat	Urban	
Mamun Sriti Public High School	June '05	Co-education	Jamalpur	Rural	
Farha Maddhomic School	June '05	Co-education	Khulna	Rural	Yes
Kurigram Girls High School	Feb '06	For Girls	Kurigram	Urban	
Amla Sardarpur High School	April '05	Co-education	Kustia	Rural	Yes
Shologhar A.K.S.K. Uccho Biddalya	June '05	Co-education	Munshigonj	Rural	Yes
Babrijhar High School	June '05	Co-education	Nilphamari	Rural	Yes
Parkhidir Pur Maddhomic Biddalaya	June '05	Co-education	Pabna	Rural	
Rasulpur Basirunnesa High School	Feb '06	Co-education	Tangail	Rural	Yes
Kaji Jalal Uddin Girls High School	Feb '06	For Girls	Sylhet	Urban	

These schools were chosen to represent the diversity characteristics of the schools that host CLCs. In particular, choices were made by:

- Establishment date   :   2 x April '05, 5 x June '05 and 3 x Feb '06
- Gender   :   8 co-educational, 2 all-girls
- Location type   :   7 rural, 3 urban
- Geographic location   :   Bagerhat, Jamalpur, Khulna, Kurigram, Kustia, Munshigonj, Nilphamari, Pabna, Tangail, Sylhet

Only secondary schools with CLCs were chosen; the few that are based in colleges, professional schools, community-based institutions and libraries were not. There were only a handful of the latter, and the concern was that the point of views from students from these institutions who were in an older age group would not be comparable to those from the vast majority of younger students from the secondary schools.

Furthermore, given the lack of a baseline for the responses of students from the CLP schools, five non-CLP schools were chosen to understand the attitudes and perceptions of students who have not been exposed to the CLP, each one adjacent to an existing CLP school and as similar as possible to them. The only discernible difference is that control schools do not have a computer laboratory, and do not receive any other form of supplementary computer education compared to the CLP.

These schools were chosen so that they were as close as possible in salient characteristics to the school with a CLC. The five control schools were:

Name of Control School	Name of corresponding CLC School	Location
Raghunathpur Bahumukhi Maddhomik Biddalay	Farha Maddhomic School	Khulna
Nimtala High School	Amla Sardarpur High School	Kustia
Malkhnagar High School & Collage	Shologhar A.K.S.K. Uccho Biddalya	Munshigonj
Jadurghat Dimukhi Ucchya Biddalay	Babrijhar High School	Nilphamari
Boro Bashania Uccha Biddalay	Rasulpur Basirunnesa High School	Tangail

Survey questionnaires were created in Bangla for students from CLP schools, students from non-CLP schools, CLP teachers, head teachers and guardians. The breakdown of interviewees are:

- 241 students of CLP schools[1],
- 108 students of control schools[2],
- 20 CLP teachers,
- 11 head teachers, and
- 40 guardians.

A total of 420 interviews were conducted.

Students in both CLP and non-CLP schools were handed out the questionnaires in small groups and at least one facilitator from D.Net walked them through the questionnaire question by question, explaining what each of the questions was asking, and responding to any queries. This was necessary, because it was the first time that many of the students were responding to a questionnaire. The students were also assured that the responses were anonymous, to allow them to respond candidly to the questions without having to worry about retribution from the authorities. This exercise took approximately an hour for each group.

Teachers, head teachers and guardians were given the questionnaires in one to one sessions where a D.Net facilitator was at hand to respond to any queries. Filling out the forms took between 30 minutes to an hour depending on how they responded to the verbose questions; the one for the guardians took less than 30 minutes to complete.

In schools where there were less than thirty students available, everybody was interviewed. In schools where more than thirty students turned up and/or were available, interval sampling was carried out, making sure there was at least a rough parity between the male and female students. In two of the schools, small discussion groups were formed so as not to disappoint the many who had turned up. Their feedback was very useful.

The guardians were invited based on an initial assessment by the teachers on who seemed to be knowledgeable about their child's education.

Two focus group discussions (FGDs) were conducted with the CLP teachers from all the CLP schools in Mymensingh and Sirajganj. These districts were chosen for FGD because they have a high incidence of CLP schools in each of them – Mymensingh has three, and Sirajganj has four:

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[1]The total number of student surveyed is 241, but we lost the 3 in the sections below because they did not respond to the gender question. The N number also varies across responses because either: a) all students did not respond to a question, often because the question did not apply to them, or b) the response was discarded during the data-cleanup phase, most often because they had circled multiple answers, or chose contradicting ones. Thus, in some cases, N is actually 230. N will vary between that low number and 241 for all responses.

[2]In some cases this number varies due to no response or due to data cleaning issues.

Name of School	Location
Haji Kashem Ali Mohila Degree College	Mymensingh
Haji Kashem Ali College	
Mukul Niketon	
Bannakandi High School	Sirajganj
North Bengal Medical College	
Jamila Model School	
BL High School	

No surveys were conducted in these schools because in some of the issues we asked the teachers to deliberate on the presented questions in the surveys. They were presented with the findings based on the responses of the students, and asked to comment on them too, in addition to the other issues we asked them to talk as well. Not having to present them with findings from students had the advantage of avoiding the possibility of them subconsciously and becoming defensive for the more critical findings.

v. Caveat:

This report has attempted to address the lack of a baseline dataset for the cohort studied by asking the interviewees to make before-and-after comparisons, and by having a control group from a comparable school. Every attempt has been made to factor in biases that may be introduced through these approaches while designing the study.

Chapter 2: Summary, Recommendations and Conclusion

i. Summary of Findings:

This chapter provides a snapshot of the findings from the impact assessment research that was carried out. Conclusions that we may draw from these findings are also noted.

Note:
a) Percentages may not add to 100% due to rounding to whole numbers.
b) Only those considered to be major findings are summarised below. The more minor findings can be found in the body of the report.
c) The term "CLP Students" is used to denote those students who are currently taking, or have already taken the CLP course. The term "non-CLP" student is used to denote those students who are enrolled in schools that do not offer the CLP course.

Findings	Conclusions
1. Students:	
Access: CLC-equipped schools are the venue of access to computers for the vast majority of students.	The CLCs are serving as conduits to introduce students to computers.
Familiarity: Before taking the CLP course, 30% of the students felt that they were familiar or very familiar with computers. The rest felt they were somewhat familiar, vaguely familiar, or not familiar at all. After exposure to the course (i.e. for those currently taking or having already taken it), 86% felt that they were familiar or very familiar with computers. The rest felt they were somewhat familiar, vaguely familiar, or not familiar at all.	The CLP course increases the familiarity of students with computers.
Rural vs. Urban Familiarity: Before taking the course, a) 28% of students in rural schools and 36% of students in urban schools felt that they were familiar or very familiar with computers, b) 68% of students in rural schools and 63% of students in urban schools felt that they were somewhat or vaguely familiar with computers, and c) 4% of students in rural schools and 3% of students in urban schools felt that they were not familiar with computers at all.	Students in rural schools have less of a familiarity with computers to start with when they begin the CLP course, compared to their friends from the urban schools. The CLP seems to manage to bring the sense of familiarity with computers for these two cohorts in parity by the end of the course.

Findings	Conclusions

After taking the course,
 	
  a) 86% of students in rural schools and 85% of students in urban schools felt that they were familiar or very familiar with computers,
 	
  b) 13% of students in rural schools and 15% of students in urban schools felt that they were somewhat or vaguely familiar with computers, and
 	
  c) None of the students in rural or urban schools felt that they were not familiar with computers at all.	

Skill-set Development: The proportion of students who had exposure to the CLP course and could perform basic word-processing, spreadsheet and general computer operation functions far outstripped the proportion of students from the control schools who could do the same. The proportion of students from schools with CLCs who could perform internet-related and advanced software functions were also higher compared to students from schools without CLCs.	The CLP course succeeds in equipping students with basic software and hardware skills.
Reaction to Computers: More than half the students described their reaction to computers by using the adjectives 'amazed', 'great', 'pleased' and 'self-conscious'. More than a third used the adjectives 'eager' and 'excited'. Between 5% and 15% of the students used the adjectives 'annoyed', 'awkward', 'nervous' and 'upset'.	The CLP course seems to elicit mostly positive responses from students. There are some negative reactions too.
Evaluation of Teaching: 19% of the CLP students felt that the teachers could have done a better job, and 12% felt that they did not learn much from the CLP course. Virtually all of them felt that the teachers helped them understand, made the course interesting and fun, and were mostly encouraging. Proportionately more of those who felt that they were not familiar before, during or after taking the course felt that they did not learn much, followed by those who felt that they were vaguely familiar.	Some students are left dissatisfied with the performance of the teachers and the amount they learn from the CLP course. Proportionately more of those who have some familiarity with computers to start with, seem to feel that they learn much from the CLP course.

Findings	Conclusions
Working with Each Other: 79% of the CLP students helped others, 70% learnt from others, and 81% enjoyed working in pairs.	Students in the CLP course exhibit a high degree of collaboration, teaching and learning from others. Four fifths of them also enjoy the process.
8% of those currently taking the course and 26% of those who had already taken the course did not enjoy working with a partner.	Their perception of the degree of collaboration changes with time between when they are taking the course to when they have already taken it, and is different for boys and girls.
Proportionately more male students currently taking the course felt that they helped and learnt from their partner during the course, compared to those who had already taken it. The change of perception is in the opposite direction for female students.	
Talking About CLP: 96% of the students reportedly talk about the CLP course with their peers, often, or sometimes.	CLP students communicate regularly with their peers about the course.
Proportionately more female students talk about the course often when they are taking the course as opposed to when they have completed the course.	The frequency of this communication changes in opposite ways from when they are taking the course to when they have completed the course based on their gender.
Conversely, proportionately more male students talk about the course often when they have completed the course as opposed to when they are taking the course.	
Intention to Take SSC Computers, and Impact of CLC: Compared to non-CLP students, proportionately the same number of CLP students intend on taking SSC Computers, but proportionately more are still undecided.	The CLP course and the CLC affect the students' decision on whether to take SSC Computers.
Proportionately more students who have already taken the CLP course intend on taking SSC Computers.	The effect was "greater" on male students more than their female counterparts, and by those who have decided to take SSC Computers, as opposed to those who have decided not to, or are still undecided.
46% of the CLP students feel that the presence of the CLC has affected their decision to take SSC computers greatly, while 27% feel that it has done so to a certain degree. 27% feel that it has had no impact at all on their decision.	

Findings	Conclusions
61% of the male students felt that the presence of the CLC has affected their decision to take SSC computers greatly, while a lesser 22% feel that it has done so to a certain degree. A smaller 17% felt that it has had no impact at all on their decision. Female students were almost evenly split between the three degrees of influence. 40% of the CLP students who intend on taking SSC Computers felt that the presence of the CLC affected their decision greatly.	
Limitations: 33% of the students who had already taken the CLP course and 52% of those who are currently taking it felt that there are limitations in the course. 47% of male students and 35% of female students felt that there are limitations to the CLP course. Limitations mentioned include: the short duration of the course and each class, lack of time to practice, overcrowded class, inexperience of teachers, lack of access to the internet etc.	The CLP course has a wide range of limitations related to the infrastructure of the CLC, the CLP course itself, and other associated miscellaneous factors.
SWOT: In the SWOT-like analysis, students noted many of the same points under strengths and weaknesses. The weaknesses and threats perceived by girls-only discussion groups referred to issues relevant only to girls, which male-only or mixed-gender groups did not address.	The CLP course has come a long way in terms of some of its features, but there is much that can be done to improve those very features. The societal barriers girls face challenge them in their participation in the CLP course as it challenges them in their school and daily life too.
2. Teachers:	
Reaction to Computers: Half or more of the teachers described students' reactions to computers as 'amazed', 'great', 'pleased' and 'self-conscious', 30% described them to be 'eager', and 15%, as 'excited'. None of the other adjectives were selected.	The ordering of the positive adjectives by the CLP teachers is very similar to those of the students. They therefore seem to be aware of the students' positive responses. The teachers, however, do seem unaware of the students' negative reactions.

Findings	Conclusions
Effect on Student Behaviour: Almost all the teachers somewhat or strongly agreed with the proposition that the students looked more confident, comfortable and enthusiastic in a computer environment as a result of spending time in the CLC. A fourth of them strongly or somewhat agreed that the students' self-confidence had not increased in a computer environment as a result of spending time in the CLC, while three quarters of them disagreed strongly or somewhat with that proposition.	The CLC seems to increase the confidence, comfort and enthusiasm of a student in a computer environment, and are somewhat split on whether it increases self-confidence.
Effect on Math, Bangla and English: Virtually all the teachers either strongly agreed or somewhat agreed that there is a positive effect of the CLP course on the students' proficiency in Math, Bangla and English.	The CLP course improves the students' Math, Bangla and English skills.
Intention to take SSC Computers, and Impact of CLC: 15 teachers noted that the presence of the CLC helped the students greatly in their preparation for SSC Computers, and 3 noted that it affected them somewhat. 13 teachers noted that the CLP course helped the students prepare for SSC Computers a lot, and 2 noted that it helped them somewhat.	The CLC and the CLP course are beneficial in the students' preparation for SSC Computers.
Difference of Student Behaviour, by Gender: Of the 20 teachers, 10 noticed a difference in interest, 12 noticed a difference in enthusiasm, 5 in confidence, 7 in comfort and 3 in ability between the male and female students. There is no clear distinction on which gender showed more of each for any of the attributes.	Male and female students respond to the CLP course in different ways, but the direction of the difference is not clear.
Rate of Learning: 13 teachers were very pleasantly surprised, 4 were pleasantly surprised some of the time at the pace of learning of the students, while 3 found the pace to be as expected.	The students are responding to the CLP material at a quicker rate than expected by the teachers.
Practice: 10 teachers noted that most students come back to practice frequently, 4 teachers noted that most come back some of the time, and some come back often, 4 teachers noted that some come back but most do not, and 2 said that none of the students come back to practice.	Students are motivated to come back to practice what they learn in the CLP course.

Findings	Conclusions
Limitations: 14 teachers felt that there are limitations to the CLP course as it is run now, while 6 felt that there are no limitations. Limitations mentioned include: lack of computers, unreliability of electric supplies and UPSs, short course duration, lack of proficiency exams, inadequate monitoring from D.Net, limited teacher honorarium, scarce opportunity to practice etc.	Teachers note that the CLP course has a wide range of limitations related to the infrastructure of the CLC, the CLP course itself, and miscellaneous other associated factors. Some of these overlap with concerns of the students.
Operational Performance of CLC: 10 teachers felt that the CLCs were very well run, while the other 10 felt that they were quite well run. None of them felt that they were either rather poorly run, or very poorly run.	The operations of the CLC are to the satisfaction of the teachers.
Selection Process: Teachers employ panoply of selection methods that attempt to employ some use of merit, interest and perceived need.	The teachers pro-actively seek out subsets of the student population using some measure of utility and equity to maximise the reception of what they teach.
3. Head Teachers:	
Quality of Teaching: 4 head teachers felt that CLP teachers teach well, while 6 felt that they could have done a better job. 8 felt that they were knowledgeable, whereas 2 felt that they were not qualified. 9 of them thought that the CLP teachers were generally very helpful, made classes interesting and fun and were mostly encouraging, and 1 of them dissented with each of these propositions.	The CLP teachers fall short of the head teachers' expectations in some counts.
Effect on Enrollment and Transfer: 10 head teachers felt that enrollment of good students has increased as a result of the presence of the CLP course, while 6 felt that transfers from other schools had increased for the same reason.	The presence of the CLP course positively affected the enrollment and transfer of students to schools with CLCs.

Findings	Conclusions
Impact on School Reputation: The head teachers noted that CLC helps the school save time and money by allowing official business to be taken care of in-house. It increases the efficiency and confidentiality of these processes. The head teachers also felt that the CLC helped students prepare for SSC Computers, increased the prestige and acceptability of the school in the community, and improved the overall environment of the school.	The presence of the CLC has had an overall positive impact on the operations and character of the schools.
Reaction to Computers: More than half of the head teachers noted that the students felt 'amazed', 'great', and 'pleased', 45% felt 'self-conscious', and 27% felt 'eager'. None of the other adjectives were selected.	The head teachers are quite well attuned to the positive reactions of the students, but not to the negative ones.
• **Intention to take SSC Computers, and Impact of CLC** • **Difference of Student Behaviour, by Gender:** • **Pace of Learning**	Findings are identical to those of CLP Teachers.
Limitations: 9 head teachers felt that there are limitations to the CLP course as it is run now, while 2 felt that there are no limitations. Limitations mentioned include: lack of computers, opportunities to practice and financial resources to overhaul capital equipment, short course length, ageing computers, basic level of computer education, scarcity of trained technicians, etc.	The CLP course has a wide range of limitations related to the infrastructure of the CLC, the CLP course itself, and other associated miscellaneous factors.
Evaluation of VAB-NJ and NRB Support: The head teachers are grateful and appreciative of this involvement by expatriate Bangladeshis. They feel it gives their communities a sense of pride and increases the prestige of the school. The students also look up to the sponsors as role models; they can also be inspired by and emulate.	The CLC creates a sense of pride in the sponsor's community, and a source of inspiration for the coming generation.
4. Guardians:	
Guardian Computer Familiarity: 6 guardians said they were not familiar with computers at all, 15 were vaguely familiar, 17 were somewhat familiar, 7 were familiar and 3 were very familiar.	Most of the guardians are aware of computers and their usage. Some have used a computer too. Relatively few are completely unaware of computers.

Findings	Conclusions
Information Sharing: 73% of the guardians said that the student talked about the course at home often, 25% of them said that they talked about it some of the time, and 2% said that they never talked about the course at home.	Information about the experiences from the CLP course is disseminated on a fairly regular basis by the students at their homes.
Reaction to Computers: More than half the guardians noted that students felt 'amazed' and 'pleased', and more than a third felt 'great' and 'self-conscious'. 21% found students to be 'eager', and 10% of the guardians noticed the students to be 'excited'. 6% also selected 'dumb' and 2% each selected 'awkward', 'nervous', 'overwhelming' and 'upset'. The ordering of the adjectives, both positive and negative, are quite the same as they were for the students themselves.	Guardians are much more attuned to the reactions of the students to computers, both positive and negative, than teachers and head teachers.
Effect on Math, Bangla and English: A majority of the guardians either strongly agreed or somewhat agreed that there is a positive effect of the CLP course on the students' proficiency in Math, Bangla and English. There is not an insignificant ambivalence for Math, and some disagreement for Bangla.	The CLP course tends to improve the students' Math, Bangla and English skills in the eyes of most guardians, although some disagree.
Effect on Student Behaviour: Almost all the guardians somewhat agreed or strongly agreed with the proposition that the students looked more confident, comfortable and enthusiastic in a computer environment as a result of spending time in the CLC. A third of them strongly agreed or somewhat agreed that the students' self-confidence had not increased in a computer environment as a result of spending time in the CLC, while three quarters of them strongly disagreed or somewhat disagreed with that proposition.	The CLC seems to increase the confidence, comfort and enthusiasm of a student in a computer environment, and are somewhat split on whether it increases self-confidence.
Limitations: 27% of the guardians feel that there are limitations to the CLP course as it is run now, while 71% felt that there are no limitations. Limitations mentioned include: lack of computers and opportunities to practice, short course length, ageing computers, basic level of computer education, lack of financial resources to overhaul capital equipment, scarcity of trained technicians etc.	The CLP course has a wide range of limitations related to the infrastructure of the CLC, the CLP course itself, and other associated miscellaneous factors.

ii. Recommendations:

Based on the findings of this assessment, suggestions made by various stakeholders involved in various facets of planning, managing and running the CLP, and the implications of the findings themselves, the following recommendations are made:

1. <u>Replace ageing equipment</u>: The costs of maintaining and repairing these ageing equipmenst are rising by the month, they increasingly disrupt the teaching routine, and disappoint the students. Part of the difficulty of servicing these equipments is that they are brand machines. Locally assembled clone machines would be better suited for the CLCs.

2. <u>Conduct the CLP classes in a regular class time slot</u>: Not having a slot scheduled during regular school hours results in having to force students to come early or stay after school, which is particularly difficult for female students. It forces students to give up time to other regular classes in the school to accommodate the school schedule. Having a regular slot will also allow better planning around holidays and school exams.

3. <u>Increase the duration of the course</u>: Not a single school we visited managed to cover everything that was intended to be covered by the CLP course. The course should be scheduled for at least 40 hours and ideally, 48 hours, from the current 32 hours.

4. <u>Ensure the duration of each class</u>: Many schools are unable to find a contiguous two-hour segment for the students to use the computers. This is detrimental to the learning experience of the students. Necessary steps need to be identified to allow uninterrupted computer-time for the students.

5. <u>Create more opportunities for the students to practice</u>: Currently, the opportunities for students who have completed the course to come back and practice are very few. Yet, regular practice is necessary to retain what is taught in the CLP course. Given that one of the bottlenecks is the amount of time the CLP teachers can dedicate to the CLC given their other responsibilities, student prefects can be assigned to oversee such practice sessions.

6. <u>Teach an Advanced version of the CLP</u>: Given the success of the CLP in introducing the students to the basics of the course, the same approach can be used to introduce students to more advanced topics, both on topics that are currently being addressed at a beginner's level, and new topics, including an introduction to the Internet.

7. <u>Discuss the issue of honorariums with teachers and head teachers</u>: While the request for a higher honorarium is valid from the teachers' point of view, it is also a reality that the CLCs are run within certain budgetary constraints that make it difficult to honour this request. D.Net should discuss this issue with teachers and head teachers to see if other sources of funding can be arranged for this purpose to augment funding from D.Net, considering utilising the CLCs for revenue generating ancillary services by making them available to the public.

8. <u>Conduct refresher training for teachers:</u> This has been recommended by some of the teachers. Teachers can also be taught some additional material with each refresher training.

9. <u>Involve the CLC in promoting non-CLP academic activities</u>: Students have responded to the CLP course with a level of enthusiasm and immersion that is not like their responses to other subjects. Computers can be leveraged as a preferred tool of learning to teach the students mathematics and science to start with, expanding to other topics with time.

10. Increase the use of the CLC in other official activities: The schools that have managed to integrate the CLC into the operations of the school have saved both time and money. Most schools however have not been able to do so, because of the lack of training of staff members, and outright resistance in a few schools. Teachers should be put through the same CLP courses as the students, where they are not already, and its use gradually increased.

11. Address the limitations that are specific to female students: The female students have noted many limitations that challenge their participation in the CLP programme that are both societal and particular to the operations of the CLC itself. Initiatives to address these issues will help girls get more out of the course.

12. Make teachers and head teachers aware of negative student reactions: The study has noted how teachers and head teachers seem to be unaware of any of the negative reactions that the students have towards computers. They need to be made aware that these negative reactions exist, and steps need to be identified to address these reactions as and when appropriate. It should be noted that not all negative reactions need to have a corresponding reaction from the teacher – merely acknowledging that they are aware of the existence of these reactions will encourage students to share their reservations more with their instructors.

13. Conduct exit-surveys for students who have just graduated from the course: Student assessments at the end of each course will allow D.Net to identify which issues are being ameliorated, which are getting worse, and which issues are appearing as new ones. One can expect exit-surveys to be more candid compared to those surveys which were taken during the course.

14. Conduct participatory research and appraisals based on the findings of this study:

This study identifies the issues that need to be addressed to improve and enhance the CLP. Active participation by all the stakeholders in this enterprise is necessary to make that process a success. The findings and recommendations made from the input of the students, teachers, head teachers and guardians should now be taken back to them and other concerned members of the local community to determine how best to move forward based on what we know now.

The primary purpose of these recommendations is to reinforce the components of the programme that are working well so as to generate more utility from them, and to revamp the components that require a revision so that they too may contribute to the programme more efficiently.

iii. Future Work:

The study managed to explain vividly about the reactions of students, teachers, head teachers and guardians of the CLP course, but we could benefit more by expanding our knowledge. The following are some issues future studies can look at:

1. Conduct a more detailed study on the effect of the CLP course on the students' Math, English and Bangla skills.

2. Investigate if there is something systemic about the course that makes students feel annoyed, awkward, nervous, dumb and/or upset, or if it is simply the initial reaction to something unknown.

3. Determine if the students believe that the teachers could have done better, and why some feel that they did not learn much from the class. Again, the concern is whether there is something systemic, since achieving 100% satisfaction on both counts is probably unrealistic.

4. Look into why a fifth of the students did not enjoy working with each other in pairs, and if anything can be done to improve the situation.

5. For the students who noted that the CLC affected their decision to take SSC Computers, determine the spread of positive and negative effects.

6. Identify the differences the teachers find between the male and female students regarding their ability, comfort, confidence, enthusiasm and interest towards computers.

7. Evaluate the various selection processes employed by the teachers in their attempt to find a balance between equity and providing opportunities to the most "deserving" cases, with the aim of identifying an optimal selection process for all schools.

8. Identify concerns of the head teachers who noted that they believed the CLP teachers could have done a better job.

9. Critically assess schools where there is a high prevalence of computer literacy, with the aim of diverting sponsored computing resources from those schools that are more needy, i.e. where the prevalence of computer literacy is much lower.

10. Ascertain if there are income-generating activities that can be undertaken by the school to fund some of the expenses associated with the CLC. These centres should ideally contribute reasonably to make the programme sustainable in the long-run.

iv. Conclusion:

This study provides us some basic understandings, and is more of a baseline from which we can go further to ask more relevant and penetrating questions to gauge the performance of the CLP. It is a qualitative study despite the tomes of data that have been harvested. Follow-up studies will be needed to reach statistically robust conclusions. The course succeeds in enhancing the computer literacy and the familiarity with computers which is quite remarkable, given the bounds it operates in. The 14 recommendations and 10 future work suggestions may contribute positively to the further development of the programme.

Chapter 3: Students

i. Group Profile:

241 students from schools with CLCs that offer the CLP course (called "CLP schools" henceforth) and 108 students from schools without CLCs that do not offer the CLP course (called "non-CLP schools") were surveyed. A profile of these two cohorts is presented below (graphical presentations can be found in Appendix B):

Category	Sub-Category	CLP School Count	Non-CLP school Count
Gender	Male	115 (48%)	61 (59%)
	Female	123 (52%)	43 (41%)
	Total	238	104
Grade	Class IX	104 (44%)	61 (59%)
	Class X	106 (45%)	39 (38%)
	Other (Note I)	28 (12%)	4 (4%)
	Total	238	104
Places of Use (Note II)	School (Note III)	220 (93%)	58 (56%)
	Relative's House	25 (11%)	10 (10%)
	Home	21 (9%)	4 (4%)
	Friend's House	15 (6%)	3 (3%)
	Computer Training Centre	12 (5%)	6 (6%)
	Work	1 (0%)	1 (1%)
	Other	16 (7%)	1 (1%)
OS Used (Note IV)	Windows 95	20 (9%)	24 (23%)
	Windows 98 (Note V)	200 (90%)	28 (27%)
	Windows NT	0 (0%)	0 (0%)
	Windows 2000	11 (5%)	0 (0%)
	Windows XP	42 (19%)	18 (17%)
	Other	2 (1%)	1 (1%)
	None	2 (1%)	36 (35%)
CLP Course Status	Already Taken	131 (55%)	Not applicable
	Currently Taking	76 (32%)	
	Will Take	26 (11%)	
	Have No Intention of Taking	4 (2%)	

Notes:
  I: "Other" includes classes VII and VIII (grades 7 and 8) and a few students who had graduated from class X, but were still around after giving their SSC exams.
  II: The percentages do not add up to 100% because none, one or more than one choice is possible for places of use.
  III: Authorities of some of the non-CLP schools obtained computers from the local administration for purposes of teaching the practical section of SSC Computers.
  IV: The percentages do not add up to 100% because none, one or more than one choice is possible for Operating Systems used.
  V: CLC computers run Windows 98.

Proportionately more male students have already taken the CLP course compared to the female students.

Proportionately more female students are currently taking or will take the course, compared to the male students.

This difference in the level of exposure to the CLP course may affect the responses of male and female students when compared to the aggregate; which is something that should be kept in mind.

Graph 2. CLP course status by gender

ii   Familiarity with Computers:

Aggregate:

Students who either have already taken the CLP course or are currently taking it were asked to indicate which of one of five degrees of familiarity best corresponded with their perception of their own familiarity with computers.

Graph 3. Familiarity with computers before and after the CLP course

Explanation of degrees of familiarity:

1. Not familiar – don't really know what they are

2. Vaguely familiar – have heard about computers, but are unable to understand how they work

3. Somewhat familiar – understand what they do, but haven't used them

4. Familiar – have used them a few times

5. Very familiar – use them often
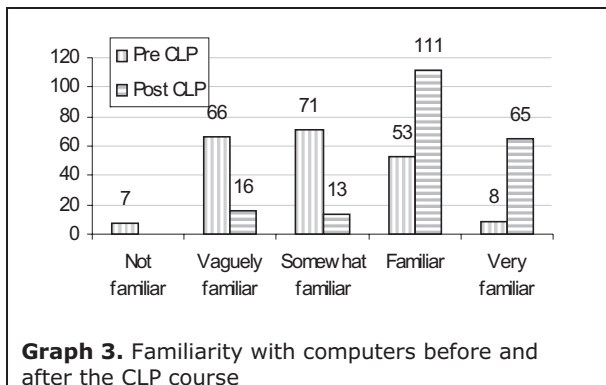
Two points are of interest here:

1.   61, or 30%, of the students had used a computer before taking the CLP course, which suggests that for a significant percentage of students, the CLC is not the first venue of exposure to computers, and

2.   29, or 14%, of the students felt that they were either vaguely or somewhat familiar with computers despite exposure to the CLP course, suggesting that they felt sufficiently alienated by computers so as not to indicate higher levels of familiarity.

CLP schools do not seem to enjoy an initial starting advantage when the self-assessments of familiarity before taking the CLP course for those from CLP schools was compared to the self-assessment of familiarity from students from non CLP schools. The distribution of familiarity is similar in shape, with both peaking at "somewhat familiar", and tapering down for degrees of familiarity on both sides. The proportion of students who had actually used a computer is also similar – 31% for those in CLP schools verses 28% in non-CLP schools. (See Appendix C-i for details)

It should be kept in mind that students in CLP schools may, in retrospect, assess themselves to be less familiar than they would had they not had exposure to computers, now that they have actually had a chance to see the myriad possibilities associated with computers, and therefore, how much they actually didn't know before.

By Course Status:

There is a clear progression regarding the perception of 'familiarity' as students complete the course. On the contrary only 19% of the students felt "very familiar" with computers while they were taking the course, the corresponding percentage was 39% for those who had already completed it. Likewise, the percentage of students who felt they were only "vaguely familiar" or "somewhat familiar" dropped from 25% to 8% by the time they completed the course. (See Appendix C-ii for details)

By Gender:

The degree of familiarity for both the genders are similar for those who have already completed the course. This is not the case for the students who are currently taking it. While 91% of the males felt that they were either "familiar" or "very familiar", only 62% of the females felt the same way. On the other hand, while only 9% males felt "vaguely familiar" or "somewhat familiar", a much larger 38% females felt similarly. (See Appendix C-iii for details)

The reason for this lower self-assessment by female students who are currently taking the CLP course compared to their male counterparts is not known. This is especially interesting though considering the fact that the difference peters out when we look at students who have completed the course. It has been suggested that the students' psychology is responsible, where boys are quick to attribute success to themselves, while girls are more critical, however there is no conclusive evidence of this.

By location:

38% of rural school students felt that they were either not familiar or vaguely familiar with computers before taking the course, compared to 28% of urban

school students, indicating that the proportion of students with little or no awareness about the use computers is much higher for students in rural areas than those in urban areas. The trend is reverse for the students who noted that they were either familiar or very familiar, indicating prior usage of computers. 36% of urban school students fell in this category, while the corresponding number was 28% for rural school students. This finding is consistent with the understanding that students in rural areas are more disadvantaged than students in urban areas when it comes to familiarity with computers.

By the time they have completed the CLP course, the percentage of students who feel either familiar or very familiar is 85% and 86% for urban and rural students respectively. The CLP course therefore seems to achieve parity regarding familiarity, irrespective of location. (See Appendix C-iv for details)

By gender and location:

There is also an understanding that girls tend to be in a disadvantageous position than boys in rural areas. Our findings indicate a slightly more nuanced picture.

Almost the same proportion of male and female students from rural schools (38% and 36% respectively) indicated that they were either not familiar or vaguely familiar, and therefore they had little or no awareness about computers. In terms of lack of awareness, therefore, there seems to be a parity between the genders. On the other hand, the proportion of female students (at 38%) who are aware of computers but haven't used them is higher than male students (at 31%), while the proportion of male students (at 30%) who have used a computer is higher than female students (at 26%). It may be inferred that while lack of awareness of computers is quite the same across both genders, girls in rural areas are relatively disadvantaged when it comes to knowing about computers but not getting to use them. (See Appendix C-v for details)

The same analysis could not be carried out for urban areas due to paucity of data.

iii.   Use of Computers:

Computer competencies were assessed under four categories, where each category was assigned certain actions:

Category	Actions
Office Tools	• Compose a document in a word processor (eg. Word) • Print document composed in a word processor • Create a table in a document • Perform calculations using a spreadsheet (eg. Excel)
System	• Turn a computer on and off • Install a new programme • Perform basic troubleshooting tasks
Internet	• Open a web page • Send an email • Search for information on the web • Create a webpage
Advanced	• Use any programming language • Use Adobe Photoshop • Create animation in Flash • Create a database (eg. in Access) • Play computer games

As detailed in Appendix D, students from CLP schools clearly outperform students from non-CLP schools when it comes to office tools, which is to be expected given that most of the software tasks in the CLP are Microsoft Office oriented.

There is also a much higher incidence of performing basic troubleshooting and playing games. These too are an outcome of the CLP course – a limited amount of time is also spent on basic troubleshooting. As for computer games, students do play the games available on the CLP machines from time to time and those who have access to computers outside the school list play computer games as one of the most popular activities, in addition to listening to songs and watching VCDs.

Internet usage is not large in either CLP or non-CLP group, but the incidence of usage is of a similar magnitude. About only 10% of the students noted that they send emails and search for information on the web and points to access to the internet in the host communities.

Advanced usage of computers is not large either; most of the 10% of students who noted that they knew a programming language were referring to their SSC Computers practical curriculum. The SSC curriculum includes programming in C and Visual Basic.

iv.   Reaction to Computers:

The students were given the 15 adjectives listed below and were asked to pick the ones that best represented their feelings towards computers. The use of these adjectives is adapted from *Factsheet: Technology Attitudes[3]*. The students were grouped into three categories outlined in this study based on their choices of adjectives: a) eager adopters, b) hesitant prove its, and c) resisters.

Aggregate:

The distribution of the response count is given in Appendix E-i. Students used a mean of 4.17 adjectives each. Male students had a mean adjective use of 3.8, while females had 4.6. A quarter of the students used three adjectives or less, while a quarter used six or more.

Adjective	Response %	Adjective	Response %
Amazed	59%	Nervous	14%
Annoyed	10%	Overwhelming	3%
Awkward	9%	Pleased	73%
Dumb	5%	Self-conscious	68%
Eager	34%	Uncertain	6%
Excited	40%	Uncomfortable	2%
Frustrated	6%	Upset	14%
Great	74%		

More than half the students noted that they felt "amazed", "great", "pleased" and "self-conscious", while more than a third of them also felt "eager" and "excited". While students felt that the negative adjectives merited fewer mentions than the positive or ambivalent ones, "annoyed", "awkward", "nervous" and "upset" are still very close to, or just over the 10% mark. That an eighth to a tenth of the students have these negative reactions is something that needs to be borne in mind, because it indicates that there is a small but not insignificant group of students who are having reactions that may cause serious impediments to their getting the most out of the CLP course.

By Gender:

The use of adfectives for "dumb", "great", "overwhelming", "uncertain" and "uncomfortable". is practically the same for both the genders. Significantly more female students noted that they felt "eager" (43% against 25% males), "excited" (53% against 26% males) and "upset" (22% against 6% males). There are differences of a few percentage points between the male and female students for the use of the other adjectives. (See Appendix E-ii for details.)

By Category:

The adjectives belong to three sets, where each set consists of 5 adjectives, and each of the three sets correspond to one of the three categories:

- *Eager Adopters* - Amazed, Eager, Excited, Great, Pleased
- *Hesitant Prove-Its* - Annoyed, Awkward, Self-Conscious, Uncomfortable, Uncertain
- *Resisters* - Dumb, Frustrated, Nervous, Overwhelmed, Upset

A student is considered to belong to one of the three categories if he or she chooses three or more adjectives from that category.

As students can choose numerous number of adjectives, that they fall in multiple categories, "None" and "Multiple" categories were also created.

133 (59%) students belong to the Eager Adopters category, and 1 each to Hesitant Prove-Its and Resistors.

10 (4%) students belong to more than one category.

85 (37%) belong to none.

Graph 4. Categorisation of reaction to computers. N = 230
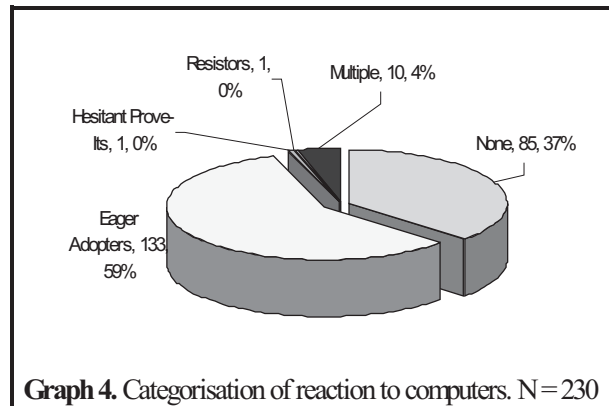
v. Evaluation of the teaching in the CLP Course:

Students were given 4 pairs and one trio set of sentences, and they were asked to choose one sentence from each pair/trio that best matched their experience with respect to the teaching in the CLP course.

Assessments	Count	Percentage
Teachers were good	180	84%
Teachers could have done a better job	41	19%
Teachers made me understand	215	99%
Teachers were not helpful	3	1%
I learnt a lot from the CLP course	189	88%
I did not learn much from the CLP course	25	12%
CLP course was interesting and fun	216	100%
CLP course was not interesting and fun at all	1	0%
Teachers were mostly encouraging	211	96%
Teachers were mostly discouraging	2	1%
Teachers were neither encouraging nor discouraging	7	3%

Virtually all the students felt that the teachers helped them understand, that the CLP course was interesting and fun, and that the teachers were mostly encouraging. Almost a fifth of the students (19%), however, felt that the teachers could have done a better job, and 12% felt that they did not learn much from the CLP course. Anecdotal evidence suggests that a portion of the students who felt that they did not learn much from the CLP course already knew more than what was being taught in the CLP course, while another portion were such quick learners that they felt they were not being taught enough. (See Appendix F-i for details)

A much larger proportion (23%) of male students felt that the teachers could have done a better job, compared to the female students (15%). 12% of both the groups felt they did not learn much from the CLP course. (See Appendix F-ii for details)

When teachers were asked why they thought the male students were more critical, they remarked that this may be because boys had greater interactions outside school with adults and/or mentors and therefore were harder to please, whereas the interactions and experiences of girls were much more limited.

vi. Working with each other:

In the CLC, two students are paired onto one computer, where opportunities are created to collaborate whilst they share the same machine. As they may not have a choice in working on the same computer as another student, they task may not be enjoyable to them which may be detrimental to their learning. To explore their responses to this designed collaboration between students in the CLP course, they were asked three questions.

- Do you help other students in the use of computers?
- Do you learn from other students on issues related to the use of computers?
- Did you enjoy working with a partner during the course of the CLP?

Aggregate:

79% of students noted that they helped others in the use of computers, and 70% noted that they learnt from other students on issues related to computers. 81% of the students noted that they enjoyed working with each other. (See Appendix G-i for details)

The reasons behind 19% of the students not enjoying working with each other should be identified. In particular, students often note that just the mere fact of having to work with someone else and therefore split time on the computer is something that they dislike. While the *two-students-one-computer* system is used because of its educational benefits, it could also be explored if the exercise of sharing the computer can be made more engaging for the partner who is not using the machine at a given time.

Teachers note that they have made a point of pairing up students of different abilities on the same machine. Apart from the obvious benefit of the weaker students, they have also observed that the stronger student seems to derive utility from being the leader by being put into a teaching role.

Some teachers have also noted that after being put into this teaching role, students have come to them and told them that they have a new appreciation for the job that a teacher does. While this realisation was not an intended outcome of the paired setup, it is a welcome by-product of it.

By Course Status:

74% of the students who have already taken the course enjoyed working with a partner, compared to 92% of those who are currently taking it. (See Appendix G-ii for details) The primary reason for suggesting for this is that during the course, students enjoy the process of discovery and assisted learning with their partner, but once the course is over, they feel that they may have learnt more if they had a chance to get the computer all to themselves. This is particularly true for the quieter students who may miss out on computer time in schools where strict timesharing is not enforced.

By Gender and Course Status:

Gender	Question	Course Status		Change
		Currently Taking	Already Taken	
Male	Do you help other students in the use of computers?	84%	73%	- 11% ⬇
	Do you learn from other students on issues related to the use of computers?	78%	58%	- 20% ⬇
	Did you enjoy working with a partner during the course of the CLP?	88%	65%	- 23% ⬇
Female	Do you help other students in the use of computers?	78%	88%	+ 10% ⬆
	Do you learn from other students on issues related to the use of computers?	67%	86%	+ 19% ⬆
	Did you enjoy working with a partner during the course of the CLP?	95%	86%	- 9% ⬇

Students' perception on how much they help other students and how much they learn from them are quite the opposite for males and females. The proportions of "yes" responses are given above.

Male students, as a whole, seem to be more critical both on the degree of the collaboration with their peers, and the enjoyment they receive out of it, especially in retrospect, when compared to their female peers.

vii. Talking about CLP:

When students talk to each other about the CLP course, it has the potential to affect the enthusiasm of students with respect to learning more about computers. Students were asked how often they talked to their peers about their experience who were not taking the CLP course .

By Course Status:

Most of the students share information and their experiences about the CLP course with their peers "sometimes", and most of the rest do so "often". The proportion of those who share such information "often" is slightly more for those who have already taken the course, at 40%, compared to those who are currently taking the course, at 35%. The proportion of students who do not share experiences about the CLP is very small for both groups, at 4% for those who have already taken the course, and 3% for those who are currently taking it. (See Appendix H-i for details)

By Gender and Course Status:

The proportion of male students who have already taken the CLP course and talk about the CLP course "often" and those who talk about it "sometimes" is almost the same, at 46% and 50% respectively. For those who are currently taking the course, the proportions are quite different – only 25% of the students talk about the CLP "often", while 75% talk about it "sometimes". It therefore seems that male students communicate with greater frequency about the CLP course post-graduation.

The pattern of communication is quite opposite for female students. Amongst those who have already taken the CLP course, a third of them (33%) talk about their experiences "often", and 64% of them talk about it "sometimes". Those who are currently taking the course, the proportion of students who share experiences "often" go up to 43% while those who do so "sometimes" falls to 53%. It therefore seems that female students communicate with lesser frequency about the CLP course post-graduation. (See Appendix H-ii for details)

viii. Intention to take SSC Computers, and Impact of CLCs:

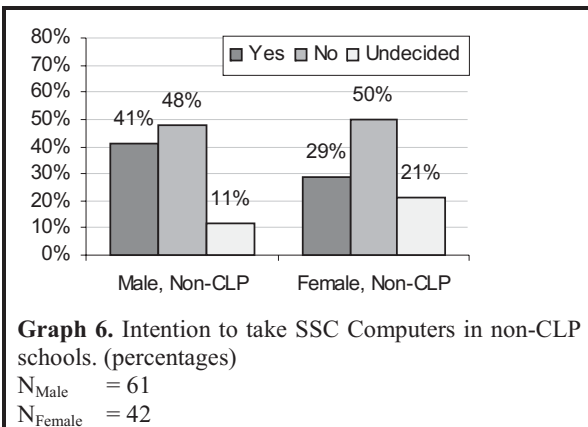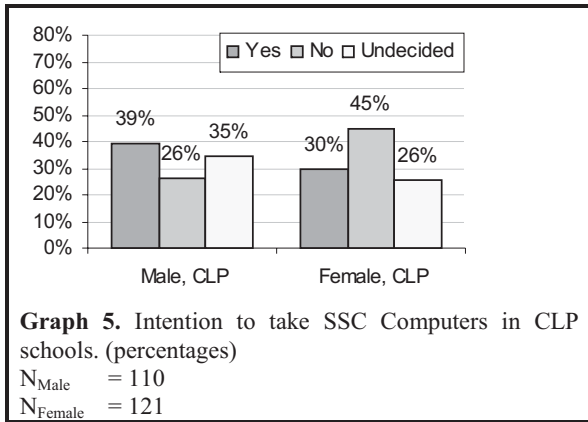Computer Shikkha, or "Computer Education" is offered as a course in the SSC curriculum. The impact of CLCs and the CLP course on the students' decisions to take this course and the amount of help it provides in preparation for it is important, because it is the most direct discernible academic effect, in the absence of any form of IT-assisted teaching for other subjects. However, it should be kept in mind that

while the CLP course is a completely application-oriented introduction to computers, the SSC course (called SSC Computers henceforth) is a broader one, combining elements of Computer Science, Computing Studies and practical computer use. There is little curricular overlap between SSC Computers and the CLP course.

CLP and non-CLP Schools:

Almost the same proportion of students intend to take SSC Computers in CLP and non-CLP schools, 34% and 36% respectively. Most of the students in non-CLP schools (49%) do not intend on taking SSC Computers, while 36% at CLP schools do. 30% of the students at CLP schools are still undecided about if they are going to take SSC Computers or not; this proportion is 16% only for non-CLP schools. It should be noted that all the students who are undecided are in Class IX or lower – those in Class X already had to decide on the subjects they are going to sit for in the upcoming SSCs. (See Appendix I-i for details)

By gender:

Graph 5. Intention to take SSC Computers in CLP schools. (percentages)
N_{Male} = 110
N_{Female} = 121

Graph 6. Intention to take SSC Computers in non-CLP schools. (percentages)
N_{Male} = 61
N_{Female} = 42

In CLP-schools, proportionately more male students intend on taking SSC Computers, while in non-CLP schools, more male students do not intend on taking it. However, more females intend not to take SSC Computers in all schools, CLP and non-CLP. The number of students who are uncertain about whether to take the subject or not is more in CLP schools, for both genders.

By Course Status:
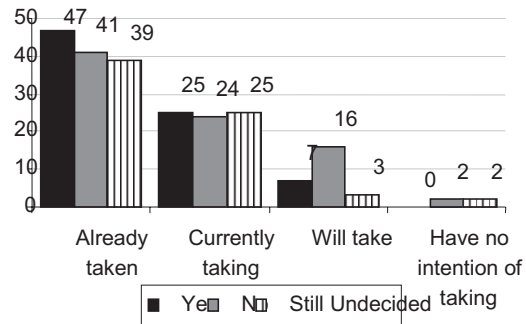
Graph 7. Intention to take SSC Computers. (numbers)
N (already taken)   = 127
N (currently taking)   = 74
N (will take)   = 26
N (no intention of taking) = 4

Among the 127 students who have already taken the CLP course, slightly more intend to take SSC Computers, compared to those who don't intend to do so, or are still undecided.

For the 74 students who are currently taking the CLP course, its an almost even split between the three categories.

Of the 26 students who will take the CLP course, most of them have no intention of taking SSC Computers.

2 of the 4 students who have no intention of taking the CLP course also have no intention of taking SSC computers, while the other 2 are still undecided.

Effect of presence of CLC:

46% of the 147 respondents noted that the presence of the CLC has had a great effect on their decision to take SSC Computers, 27% noted that it affected their decision to a certain degree, and 27% noted that it did not affect their decision at all. (See Appendix I-ii for details)

It should be noted that students were not asked to discern between positive and negative effects – therefore, these responses should not be seen as the presence of the CLC simply being one of an encouraging element for them to take SSC Computers. While many have become enthusiastic about learning more about computers and their taking SSC Computers is an expression of that eagerness, it has also been seen that some have realised that SSC Computers is more of an academic subject rather than an application-oriented one, and therefore feel that it has little utility, as far as they are concerned, in their real life aspirations.

Another very important factor that needs to be mentioned and that undoubtedly has a bigger role to play in the student's decision is the fact that SSC Computers is an "optional subject". For students in the Science Division, either Higher Math or Biology can be taken as a "compulsory" subject, and one as "optional". Thus, if Higher Math is taken as "compulsory", then Biology can be taken as "optional", and vice versa. However, to take Computers as "optional", one must have Higher Math as "compulsory". This automatically prevents one from taking Biology as "optional", since only one "optional" subject is allowed.

This state of affairs leads to a situation that discourages taking SSC Computers because to apply for medical schools, one needs Biology, and to apply for engineering schools, one needs Higher Math. Most meritorious students intend on applying in both fields, making it necessary for them to take both Biology and Higher Math, and impossible to take Computers. Only those who are absolutely sure that they have no intention of applying to the medical schools are free to take Computers as "optional" without having to worry about consequences down the line.

Their interest, in pursuing a medical profession is thus a significant determinant in their decision to take SSC Computers in addition to the presence of the CLC.

Effect of Presence of CLC, by Gender:

Disaggregating the answer to the query of whether the presence of the CLC has affected the student's decision to take SSC Computers by gender reveals an interesting difference.

While the female students were almost evenly split between the three levels of influence, male students largely felt that the presence greatly affected their decision, while a much smaller proportion felt that it affected their decision to a certain degree or that it did not affect their decision at all.

The presence of the CLC thus seems to have a much greater impact on the male students.

Has presence of CLC affected decision?

Male: 61%, 22%, 17%
Female: 33%, 32%, 35%

☐ Yes, greatly ☐ Yes, to a certain degree ☐ No
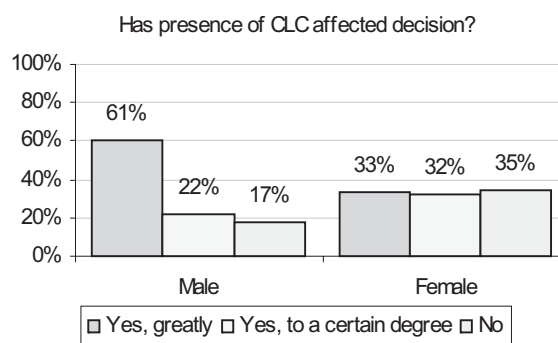
Graph 8. Effect of presence of CLC on intention to take SSC Computers, by gender. (percentages) $N_{Male} = 69$, $N_{Female} = 78$.

Effect of Presence of CLC, and Intention to take SSC Computers:

The greatest resonance can be found between those who intend on taking SSC Computers, *and* those who feel their decision was affected by the presence of the CLC, making up 40% of the 147 respondents. Very few of those who are taking the SSC subject felt that the presence of CLC had very little or no affect on them.

The degree to which the presence of the CLC affected the decision who do not intend on taking SSC Computers is evenly split.

Most of those who are still undecided feel that the presence of the CLC affects them 'to a certain degree'.
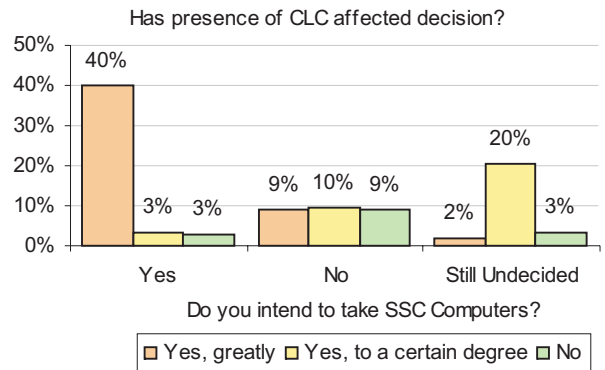
Graph 9. Effect of presence of CLC on intention to take SSC Computers, by gender. (percentages) N = 147.

ix.   Limitations of the CLP Course:

Aggregate:

42 of the 129 students (or 33%) who had already taken the CLP course felt that there were limitations to the CLP course, and 37 of the 71 students (52%) who are currently taking the CLP course felt the same. (See Appendix J-i for details) Those who are currently taking the course therefore perceive there to be more limitations compared to those who have already taken the course.

By gender:

54 (or 47%) of the 114 male students felt that there are limitations to the CLP course, while the corresponding figure is 36 (or 35%) for the 103 female students. (See Appendix J-ii for details) The feeling that there are limitations to the course is therefore more prevalent amongst the male students.

Details:

Amongst the 200 students, there were quite a few limitations listed. The ones mentioned often are listed here.

Some are related to the infrastructure of the CLC:
- There are too few computers compared to the number of students
- The computers malfunction frequently enough for it to be a distraction
- Electricity is intermittent

Hardware failure is becoming an increasingly bigger problem as more and more of the old and ageing equipments fail. This includes hard disk crashes, dying monitors and malfunctioning accessories. Apart from the disruption it causes in teaching, students also get disenchanted and discouraged as a result of these forced disruptions. These days, students also have increasingly greater access to other venues of computer usage, making this concern on performance rather pressing. "Computers at other computer training centres are more advanced – we need similarly advanced computers," one student told us.

Some perceived limitations are related to the course:
- The duration of the course is too short.
- The duration of each class is also too short.

Other limitations that were mentioned are:
- There is a lack of time for the students to practice.
- There are too many students in each class.
- The teachers are not that experienced.
- There is no access to the internet, preventing students from communicating with the outside world.
- There is favouritism, where the teacher spends more time with selected students, ignoring the rest of the students .

The students' assessment that the teachers may not be experienced is made seldom, but it is worth noting because it usually results from the fact that by the end of the CLP course, there are students who, through personal perseverance, learn things within the short duration of the course that their teachers do not know about. Teachers are constantly surprised by the impressive pace of learning some students demonstrate.

The issue of favouritism was brought up by one student alone, but we feel that it merits mention because this is one divisive issue that can be severely detrimental both to the substance and spirit of the CLP course.

The perception of limitations are also related to expectation of the students. The fact that the students have very high expectations from the CLP course is perhaps best captured by the following statement made by one student: "We are not taught everything there is to know about computers!"

x.   SWOT-like analysis:

In reality there was a lot of enthusiasm associated with with the CLP, it happened quite often that a lot of students turned up for the surveys, from whom we would interval sample a certain number. So as not to disappoint them, take advantage of their eagerness and learn more about their experience with the CLC schools, students of two schools were given a very basic understanding of SWOT (strength-weakness-opportunity-threat), and asked to identify issues that would fall in those categories viz. a viz. the CLP course. This exercise could not be replicated in more schools as it was an impromptu decision. Nevertheless, while the points raised here are quite anecdotal, they are also those that were raised in other schools too, and therefore are noted here.

In one school, the students separated by gender and groups were formed to delve into one of the four categories, while in the other, groups looking into one category each, were mixed-gender.

[Note: These are abridged lists. Some points noted under "strengths" have been moved to "opportunities" and vice versa, and some from "weaknesses" to "threats" and vice versa, the reason being they were incorrectly categorised as one or the other.]

Strengths		
Male Group	**Female Group**	**Mixed Group**
• We have a computer lab • There are enough computers • There are enough books on computers • Our computer teachers help us a lot • Our students are very interested to learn about computers • We get enough time to learn about computers • All our computers are equivalent to Pentium-3 • Every computer is connected to a good printer • Our computer teachers are very experienced • We have U.P.S. units in our lab	• The standard of the computer lab is a strength • Our trainers are good • Students seem to have an innate ability to learn about computers • There is interest to learn about computers • Our teachers are trying to increase the number of computers in our school so we can learn about computers more • Teachers teach us about computers with great care • We can prepare exam question sheets with the help of computers	• We have computers in our school which will make our future bright • We have computer teachers in our school who help us learn about computers • We have facilities to learn about computers in our school • Our syllabus has adequate materials which help us learn about computers • Because there are computers in our school, students can learn about it, and there are facilities for the female students to learn about computers as well

In general, the students noted the quality of the lab facilities, the involvement of the CLP teachers and the interest of the students as strengths.

Weaknesses		
Male Group	**Female Group**	**Mixed Group**
• There aren't enough computers • Girls do not show enough interest to learn about computers • Lack of electricity – there aren't enough U.P.S.s • There is no internet • The amount of time available for work is not adequate • We get only two hours of computer class a day – which is not enough • Shortage in the number of teachers • There are few printers • Computers are not that fast and often have problems • Nothing is taught outside the tasks assigned in the CLP course	• Girls show less enthusiasm • Girls are not given enough time and opportunity • Girls are encouraged less • Girls fall behind because of a lack of interest • Sometimes there is interest, but they cannot speak openly about it • Boys are taught computers every day; girls are not only not taught computers every day, but have to come on holidays as well, to learn about computers • Girls cannot openly express their opinions about their queries regarding computers because they are worried about what people might think. This is a big weakness. • When school is in session, computer classes are conducted after school is over. Going home late is a problem for girls. As a result, they do not show interest in learning about computers even though they want to.	• Three computers are not working in our school • We cannot use the computers in our school properly • We cannot find time to use computers even though they are there in the school • Lack of good transportation

There are a couple of interesting issues to note here:

• Many of the points that were noted as strengths are negated here. For example, it is said that there aren't enough computers, their performance is less than satisfactory, etc. This is probably a result of viewing the proverbial saying of the glass being half-full or half-empty. While the students have gained enormously from the presence of the CLC, they also agree that there is a lot of room for further improvement.

• While most of the weaknesses noted by the female-only group involved reference to their gender, only one point of all those noted by the male-only and mixed groups did so. More importantly, there is a difference in viewpoint about the reason behind the gender-related weakness. The male-only group succinctly pointed out that "girls do not show enough interest to learn about computers", whereas the girls outlined multiple societal and customary norms that act as impediments to their studying about computers.

Conversely, the female-only group did not point out any weaknesses with respect to the class, the facilities, the teaching etc. There definitely seems to be a very different perception based on the gender of the respondent about the major weaknesses of the CLC/CLP course.

• Interestingly, the mixed group, with 3 boys and 2 girls, did not note any gender-related weaknesses.

• Many of the issues noted by the female students reflect a perception of a lack of caring or discrimination when it comes to girls. The fact that they have to come on holidays to attend CLP classes while the boys do not; and that no accommodation is made despite the fact that it is difficult for girls to stay after school hours fall into the first category; moreover they are "not given enough time and opportunity", are "encouraged less", and that "teachers do not try to understand what we are saying" fall into the second.

Opportunities		
Male Group	**Female Group**	**Mixed Group**
None of the all-male group analysed the opportunities.	• Computers help us become established in society • We get to know about the world through computers • We get to learn about the advances in modern technology • We can discuss about computers with students from other schools with the help of teachers • We can solve many complex tasks using computers • Knowing computers also brings improvements to ones job • We get to know of important news through computers • We get to know about the disasters in any country through computers • We use computers to exchange information • We also use computers in healthcare • Computers have a lot of importance in commerce too	• Computers allows one to create opportunities for self-employment • Dexterity of our fingers increases from use of computers • We can solve any problems in the future if we know computers • Computers help us increase our knowledge • Using computers increases our understanding of Maths, English and Bangla

It is encouraging to see that there is a fairly good understanding about the opportunities that knowledge of computers can provide us in today's world.

Threats		
Male Group	**Female Group**	**Mixed Group**
None of the all-female group analysed the opportunities.	• Limitations on free movement of girls • Limitations due to superstitions. Many think girls do not need much education. • Lack of interest on the part of the parents • Lack of interest towards girls on the part of the class teacher • Girls falling behind boys because of societal constraints • Girls getting into child marriage because of social norms • Not being able to get involved with outdoor activities because of societal barriers • Girls not being able to study because of societal barriers, and as a result, not being able to achieve success • Many girls have to stop their education because of eve teasing • Girls, in turn, cannot give their children opportunities to study because of social barriers	• The opinion of many guardians is that what is the point in educating girls? This is the biggest weakness • Transfer of our computers • Issues related to computer viruses • Parents do not have enough confidence on female children • Lack of practice after learning about computers

The observations made with reference to the way the girls-only group reported weaknesses is also applicable for threats. All the points relate to the threats as a result of various barriers and limitations imposed by their surrounding because they are girls. Some issues, such as restriction of movements, are particularly applicable to the CLP course, but the rest are generally applicable to female education in general. It therefore seems that the threats to female computer education are seen to be the same as to their education in general.

The mixed group also noted two threats to female students in particular, and also three other generic threats.

One of our surveyors had a particularly telling experience, where a mother came up to her, told her flatly that she didn't think anything good would come out of her daughter learning about computers, and that D.Net shouldn't be giving her ideas; the mother personally attacked the surveyor for not being married and condemned her for travelling around without an escort, instead of raising a family.

These listings of strengths, weaknesses, opportunities and threats that students perceive with respect to their education in computers are particularly telling. There is the caveat that these are from two schools only, and therefore should not be considered as across-the-board opinion, but it is indicative of issues that are often missed, and that we should keep in mind as we continue onto other sections.

Chapter 4: Teachers

i. Group Profile

Only teachers of the CLP schools were interviewed. Of the 20 teachers who were interviewed, 16 were male and 4 were female. All the 13 teachers we talked to during the focus group discussions (FGDs) were male. The FGDs were conducted with teachers of schools that were not interviewed. The quantified responses are from the 20 teachers who were interviewed.

Classes/Grades Taught:

The teachers who teach the CLP course in the schools are not necessarily dedicated to teaching that class alone. They are initially nominated by the school and sent for training to D.Net. However, on return to their schools, they are often not relieved of their duties of teaching other courses.

Category	Count
Teach no additional subjects	11 (55%)
Teach SSC Computers but not other subjects	5 (25%)
Teach other subjects but not SSC Computers	3 (15%)
Teach both SSC Computers and other subjects	1 (5%)

Interaction with students who do not take CLP course:

Teachers were asked if they have extensive interaction with students who do not take the CLP course. This was done to gauge the basis of their assessment of CLP students in comparison to those who are not in the course.

15 teachers said that they had a lot of interaction with students not in the CLP course, 4 said that they had some interaction, and 1 said that he had no interaction at all.

"I have noticed interest in all my classes. Students from other classes ask me when I will show them how to use a computer. They also want to learn. I tell them I will, but how? I have assured them that I will take them to the computer class for a short time, if I can get some assistance from you." said one teacher.

"I know almost all the students. I take their general class, and they are very interested in doing the CLP course." said another teacher. *"Teachers do recognise that there is still some ground to cover. Lack of awareness and fear of computers are there,"* notes one teacher.

ii. Familiarity of Students with Computers:

The teachers were asked how familiar they generally found students to be before they took the CLP course. There response was as follows:
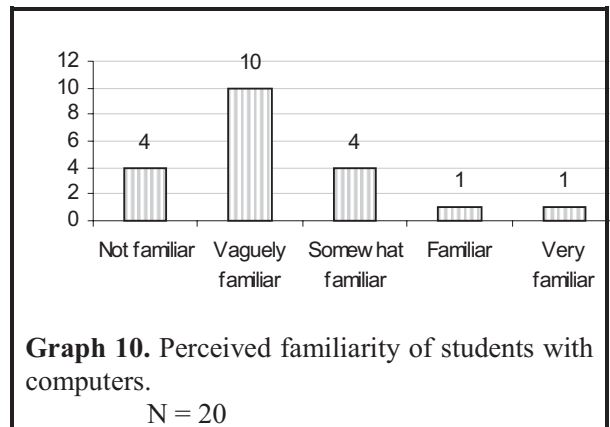
Graph 10. Perceived familiarity of students with computers.
N = 20

Explanation of degrees of familiarity:

1. Not familiar – don't really know what they are
2. Vaguely familiar – have heard about computers, but don't understand what they do
3. Somewhat familiar – understand what they do, but haven't used them
4. Familiar – have used them a few times
5. Very familiar – use them often

Teachers noted that there are some students who are way ahead of the curve, who are experts. They help their classmates, and in some schools are allowed to work as much as they want. In some cases, the teacher's training is not advanced enough to assist them with certain issues.

Those students who take the course with prior experience have also been observed to end up learning more. Their learning is assisted by the fact that they may have a computer at home, or have access to it at a friend's or relative's place.

There are also some students who are disappointed as a result of having prior experience. The two most common reasons are: a) their knowledge surpasses the content of the CLP course, and b) they have access to Windows XP and computers with a higher configuration that provides a richer computing experience. In one particular school where more than half the students seem to have computers, this is a persistent problem, where a few students invariably drop out of each batch. The CLP teachers try to compensate for this by taking only those students who lack prior exposure to computers, and by taking a few more student than the allocated seats. Nevertheless, there are always a few who feign ignorance so that they can enroll in the course.

iii.   Response to Computers:

The 15 adjectives that students were asked to gauge their reactions against were also presented to the teachers. They were asked to note which of these adjectives described the reactions to computers they would often see from students. (They could choose more than one adjective)

Adjective	Response Count	Adjective	Response Count
Amazed	13	Nervous	-
Annoyed	-	Overwhelming	-
Awkward	-	Pleased	16
Dumb	-	Self-conscious	10
Eager	6	Uncertain	-
Excited	3	Uncomfortable	-
Frustrated	-	Upset	-
Great	10		

Half or more than half of the teachers noted that students felt "amazed", "great", "pleased" and "self-conscious", 30% found students to be eager, while 15% found them to be excited. The order of these adjectives is roughly the same as they were for the students themselves. This is encouraging, that the teachers seem to be able to gauge the predominant reactions of the students well.

None of the teachers noted a single adjective with a negative connotation. As we have seen earlier, this is not the case for students – "annoyed", "awkward", "nervous" and "upset" are reactions that polled about a 10% response, but this is not reflected in the teachers' response. The teachers therefore do not seem to gauge these negative reactions well. It should also be noted that in a typical school environment, students are much less likely to share or address such negative responses, thereby preventing the teachers from recognising these as significant reactions.

iv.   Effect of Computers on Students' Behaviour:

Teachers were asked if they have noticed a change in the students' behaviour in the computer-oriented environment as a result of the time they spent in the CLC. They were asked if they "strongly agree", "agree somewhat", "neither agree nor disagree", "disagree somewhat", or "strongly disagree" with certain statements that are given below, with responses:

Statement	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
CLP students look con fident in a computer environment	12	7	-	1	-
CLP students look comfortable in a computer environment	14	4	1	1	-
CLP students look enthusiastic about working with computers	18	2	-	-	-
The self -confidence of CLP students does not seem to have increased after taking the course	4	1	-	1	14

Bridging Digital Divide For Rural Youth: An Experience from Computer Literacy Programme in Bangladesh

Virtually all the teachers either agreed strongly or agreed somewhat that the students look confident, comfortable and enthusiastic in a computer-oriented environment. About a quarter of the teachers, however, did agree with the assertion that students' self-confidence has not increased.

v.   Effect of the CLP Course on Math, Bangla and English:

It has been suggested that the CLP course has the potential to positively affect a student's proficiency in math through use of spreadsheets and its use of formulae, and Bangla through allowing them to edit comprehension material time and time again, and English through spelling and grammar check in Microsoft Word. The teachers were asked if they agreed with these suggestions. Virtually all the teachers either agreed strongly or agreed somewhat that there is an effect of the CLP course on math, Bangla and English:

Statement	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree
The CLP course helps CLP students read and write better English	12	7	-	1	-
The CLP course helps CLP students read and write better Bangla	14	4	1	1	-
The CLP course helps CLP students perform better in maths	18	2	-	-	-

vi.   Intention to Take SSC Computers, and Impact of the CLP and the CLC:

Graph 11. Effect of presence of CLC on decision to take SSC Computers. (numbers, percentages)
N = 20

Graph 12. Help to prepare for SSC Computers as a result of taking the CLP course. (numbers, percentages)
N = 20
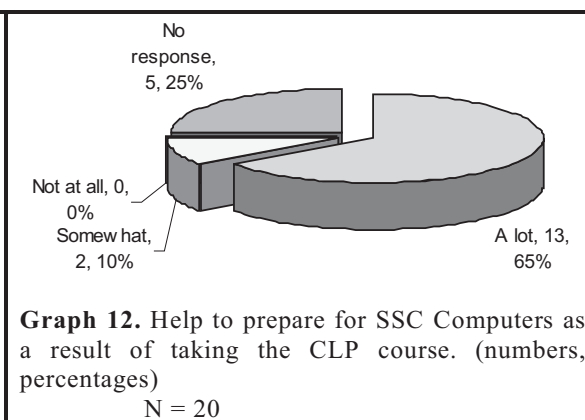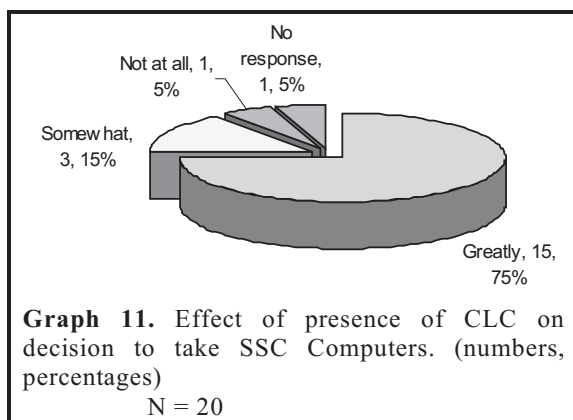
The 20 CLP teachers were asked if the presence of the CLC has affected the students' decision to take SSC Computers. 15 said that it had affected that decision "greatly", 3 felt that it had affected it "somewhat", 1 felt "not at all", and 1 did not respond to the question.

When asked if taking the CLP had helped students to prepare for SSC Computers, 13 felt that it had helped the students "a lot", and 2 felt that it had helped them "somewhat". Nobody felt that it did not help them at all, but 5 teachers abstained from responding.

In both cases, the "no response" were there because teachers felt they did not have enough information to side with any of the options offered to them.

The teachers noted that in addition to the disadvantaged position created by the subject distribution setup outlined in Chapter 1, viz a viz SSC Computers and other subjects, there is also the

fact that most of the job opportunities that involve computers are in the capital, Dhaka, in the private sector, which is not there in the smaller towns around the country, where many of the CLCs are located. As a result, students spend a lot of time on songs, music, VCDs etc. even though it does not help them to develop their careers.

vii. Difference between Boys and Girls in Response to CLP Programme:

The teachers were asked if they noticed a difference in the way that the male students responded differently to the CLP programme compared to the female students. In particular, they were asked if they noticed a difference in any of the following: a) Ability, b) Comfort, c) Confidence, d) Enthusiasm, and e) Interest. The response was as follows:

Difference in the way boys and girls responded to the CLP programme with respect to:	"Yes" Count
Enthusiasm	12
Interest	10
Comfort	7
Confidence	5
Ability	3

Of the 20 teachers, 15 said that they had noted a difference in at least one of the categories, 3 said they did not notice any differences in any of these categories, and 2 did no respond to the question.

What is interesting though is that there is no consistent pattern on which gender expressed more of any of the five qualities than the other:

Difference in the way boys and girls responded to the CLP programme with respect to:	Boys show more of it	Girls show more of it	Gender not noted
Enthusiasm	3	2	7
Interest	4	1	5
Comfort	3	-	4
Confidence	1	-	4
Ability	2	-	1

It has been noted that:

- When classes are held after school hours, boys show a great amount of interest because they are able to stay after school

- Because boys get a chance to work outside, they have a higher level of enthusiasm
- Confidence is a direct result of how much practice the students get
- Boys displayed comfort especially with multimedia and gaming applications

Two points are worth noting here :

i. While a fair number of teachers noted a difference in at least one of the five behavioural characteristics, most of them did not note whether boys showed more of it, or girls, despite being asked to do so.

ii. Of the teachers who did note a difference, observed that boys showed more interest, enthusiasm, confidence, comfort and ability than girls. Given that both these numbers are in the single digits, these numbers should be treated as anecdotal.

During the FGDs, some of the teachers made a few interesting comments.

One teacher noted, "There is great variation in the calibre of the male students – those who are good are very good, and those who do not perform well do not perform well at all. In contrast, the female students are of a more uniform calibre, which is partly because they learn what they are taught but do not go outside the bounds of what they are taught."

Other teachers tended to agree. They noted that boys tend to mess up the settings of the computers and disturb others while girls don't, but that while girls would often do no more nor no less than what they were told, boys would keep pushing the bounds of what they were expected to know, which possibly helped them learn more.

viii. Level of Collaboration:

Teachers were asked if the level and nature of collaboration between students in the CLP course was similar to collaboration between them in other courses.

Is the level and nature of collaboration between students in the CLP course similar to collaboration between them in other courses?	Count
Yes, it is similar	15
No, it is different	4
Do not have enough facts to make a statement	1

Are you pleasantly surprised at the pace at which students learn about computers in the CLP course?	Count
Yes, very pleasantly surprised	13
Yes, I do get pleasantly surprised some of the time	4
No, their pace of pickup is as I expected	3
No, not at all – I am disappointed at their pace of pickup	0

Teachers identified two reasons on why collaboration is more in the CLP course than in other courses:

- In other courses, students are unwilling to expose their weaknesses to other students, which naturally leads to their getting less help from others

- Students give each other hands-on help in the CLP course and they enjoy it. But they do not help each other in the same way in other classes.

As one teacher succinctly puts it, "Students collaborate in the computer class. In other classes, they compete."

Some have noticed a spill-over effect of collaborating in the CLP course onto other subjects. *"Having to work as 'two man on one computer' has resulted in a sharing mentality in them. And I have noticed that they are also sharing in other classes too. I think this is a great contribution of the CLP programme,"* observed one teacher.

The amount of collaboration is also a welcome aspect in the course, according to the teachers. Given the shortage of teaching time, they notice that the students explain things to each other that they could not otherwise cover. They also notice that students can often explain things to each other much better and faster than the teachers themselves.

ix.   Pace of Learning:

Teachers express surprise at how quickly many students pick up or learn the course material. They were asked how often they were "pleasantly surprised" by their pace of learning.

Most of the teachers were pleasantly surprised to some extent or other, and none were disappointed.

x.   Coming Back to Practice:

Maintaining a certain proficiency in computers requires regular practice. The teachers were asked how often they come back to practice after completion of the CLP course.

Do students who have graduated come back to practice their computer skills?	Count
Yes, most come back to practice frequently	10
Yes, most come back to practice some of the time, and some come back frequently	4
Yes, only some of them come back to practice, but most do not	4
No, none of them come back to practice at all	2

Coming back to practice is not always possible even if the students have the time and inclination because when the CLC is open, it is almost always in use by CLP batches. Virtually all the schools also require the presence of a teacher when the students are in the CLC, and teachers often have numerous other duties.

xi.   Limitations to CLP Course:

The teachers were asked if they felt that there were any limitations to learning computers through the CLP course. 14 teachers felt that there were some limitations, while 6 felt that there were no such limitations.

The limitations listed were quite a few, and of a few different types. Most often mentioned were those related to infrastructure:

- There are too few computers compared to the numbers necessary to allow every student to eurol in the CLP course
- The voltage of the electricity is often low, which damages the computer equipment

- There are times when there is no electricity for an hour or more at a stretch
- The UPSs supplied are not that reliable, and do not supply power for that long either
- Connection to the internet is not there, as a result of which students are not able to learn hands-on about it

These issues related to the infrastructure are becoming increasingly important as it is not just interrupting the CLC operation, but also resulting in disenchanted students.

Some teachers also noted though that the technicians who come from D.Net are often very pressed for time. They fix the most pressing issues, and then rush off to the next CLC that needs their attention, leaving behind them instructions to fix the simpler problems.

Many are related to course specifics. Those mentioned include:

- The length of the course is too short
- The time spent on MS Word and MS Excel are not enough
- There should be specific exams at the end of the course to assess the students

Other limitations that were mentioned are:

- There is not enough monitoring from the part of D.Net
- Because the course is completely free, and because it does not help bring good grades in end-of-year or end-of-school exams, the students show a lot of interest at first but often end up not giving it enough importance
- Teachers feel that their training is not adequate because they cannot solve many of the problems that come up when teaching computers
- Teachers also feel that there should be a provision for refresher training, and/or more advanced trainings
- Honorarium for the teachers is very limited, and is also not provided regularly
- There is little opportunity for the students to practice
- Students are given a certificate at the end of the course, but it does not indicate their level of performance. To encourage those who do well, there should be a provision for Honours, or for awarding a prize to the students who secure 1st, 2nd and 3rd positions.

One particular limitation revolves around the **CLP course hours.** As the CLP course is not a regular subject in the school, it cannot be accommodated in the school routine. This means that the classes are taken before and/or after regular school hours. This makes it particularly difficult for female students to stay back after school hours. If regular class cannot be taken due to poor weather, power failure or other unavoidable factors, make-up classes have to be taken during the 1st hour tiffin period, but that again, is not enough. All the teachers we talked to, all of them unanimously noted that they have been unable to take the full number of hours of classes prescribed.

The issue of **honorarium** came up a few times too. Teachers noted that while their involvement in the CLP course was a labour of love, and they enjoyed teaching the course because of the zest and enthusiasm they saw in the students, they felt that the amount they received should be reviewed as well. Currently the honorarium is between Tk. 500 and Tk. 1000, which is felt to be disproportionate to the amount of effort put into the CLP course. In the words of one teacher, *"Our basic salary as a teacher is Tk.3-4 thousand, and we can earn anywhere between Tk. 3,000 and Tk. 5,000 in addition, if we spend the same amount of time as we do in the CLP course doing private tuitions."*

Having discussed the limitations of the CLP course, the teachers invariably noted that despite the fact that things could be better, they really appreciate that VAB-NJ sponsored computers for their school, that D.Net administers the CLP course, and are grateful that someone who is related to their institution in some way is thinking about how to contribute to their home community.

xii. Operational Performance of the CLC:

Teachers were asked how well run they found the CLC to be. They were given the following options: (a) very poorly run, (b) rather poorly run, (c) quite well run and (d) very well run. Of the 20 CLP teachers, 10 felt that the CLCs were quite well run, while 10 felt that they were very well run.

The teachers were also asked to engage in critical self-assessment, since the running of the CLC is left mostly to them, with varying degrees of involvement of the school administration.

Teachers credit the success of the CLCs to the interest and enthusiasm of the students. Students often come during their tiffin (mid-day snack) break to practice. Many feel that the biggest success of the CLP course is that after taking it, students are not afraid of using computers any more. And they feel that there being no fee for the course acts as an additional incentive to take it. D.Net's efforts, in general, are also much appreciated.

In addition to the limitations noted earlier, such as scarcity of equipment, intermittent electricity, limited honorarium etc., a few more impediments were noted that prevented the CLCs from performing even better. These include:

- The CLC teachers often teach other important subjects that the student will sit for in the SSC. This prevents them from being able to give a lot of time

- The CLP course cannot run when the school is closed, or when there are exams. This disrupts the schedule of the course, and forces students to spend time redoing what they forgot instead of working on new material

One particular positive effect of the CLC that is often pointed out is that the computers in the lab are used by the teachers for various functions. The most common are:

- calculating grades to prepare mark sheets, which greatly improves the turnaround time on letting students know their results, and
- typing of exam questions in the school, which prevents question leakage before the exams

xiii. Selection process:

Before the study, it was expected that most of the schools were selecting students by roll number, i.e. based on merit (since the roll numbers are assigned according to the result of the year end exam). This expectation was based on initial discussions with the school on possible selection methodologies.

The reality seems to be quite different.

Most of the selection methodologies are quite straight forward:

- Students are chosen by roll number, as indicated above.

- Students who express an interest in the CLP course are asked to submit their names, and are taught on first come first serve basis. There is no discrimination in the selection based on the student's academic merit as indicated by his/her roll number.

- Students are chosen on a first-come-first-serve basis.

One aspect that we found all selection processes to have in common was their endeavour to keep gender parity, though some circumstances made it impossible to achieve such parity. This is generally achieved by running parallel batches for boys and girls – it is the case that most of the CLP batches are gender segregated.

At times, teachers are willing to make exceptions for a student or two due to extenuating circumstances, which according to them, usually takes the form of very high interest and overwhelming enthusiasm to learn about computers.

Those who are not interested, who already know computers and those whose guardians object are generally not taken. One school also disqualifies students who attend private tuition classes as there happens to be a time clash between their CLP course & private tuitions.

Some selection processes are a little more complicated, either because they attempt to maximise the efficacy of the programme, or because they tend to take into account certain realities that are considered important:

- Students who are interested and who are meritorious, as indicated by their roll number, are chosen first.
- Students are picked by merit, and then they are short listed by interest.
- Students are given an initial idea about computers. Only then are they asked to express their level of interest, based on which selection takes place.
- First, those in the Science division are enrolled because learning about computers is considered to be more relevant to their course of study. Then, those with more interest in the Humanities are enrolled. Within the divisions, roll number is also take into account in the selection process.

- Conversely, one school takes students from the Arts and Humanities divisions only, and not from the Science division.
- One school offers the course to students who live in the hostels (dormitories), and then, if there are vacancies, to those taking SSC Computers.

It should be noted that none of the points were mentioned by all the CLP teachers, and many were mentioned by only one. Therefore, what is identified as a limitation by one teacher may not necessarily be a limitation present in the CLC of another CLP teacher.

A few teachers, however, have put in an enormous amount of thought and effort into the selection process. Consider the following description by one teacher in Mymensingh:

"There are too many students in our school, so we couldn't just give a notice asking students to apply. Students were chosen from grades 8 and 9. In grade 9, there are 13 sections, with about 60 students in each section. I randomly went to one section in grade 8, and one in grade 9. I asked them to give an application to the Head Teacher and the CLP teacher, and include their result sheet. Then, according to their results, I created a group of students, half of whom were boys and half of whom girls. They were good students, with good attendance. They came to class 5-10 minutes early, and were attentive. 50 students were chosen like this and graduated.

However, it was also a reality that of the 50, mostly were well-to-do by our community's standards. I thought that I should give those students a chance who are poor. I did this for 30 students. I went to the classes and asked whose father or mother was a newspaper vendor, worked at a sweet shop, as domestic help, as a rickshaw puller etc. Only a few put their hands up, realising that a certain amount of confidentiality was necessary to succeed in this aim, I asked them to come and talk to me personally in my office. Amongst those who came but were relatively well-to-do were passed over, and the poorest of those who showed up were taken. I was a little disappointed though – their performance was lacking, they would not come in time, they would be absent, and there was a general lack of interest. Some would even not be in school.

I then decided to combine the two, and take those who were poor and meritorious. 24 such students have passed already; there are 21 more who will be taking the CLP course shortly. I have found their performance satisfactory both in terms of attendance and interest. This flexibility in being able to evolve the selection process has worked out quite well now."

There are many teachers who are willing to adapt their thinking and adopt new processes to achieve what they consider to be the best way to end up with a subset of student population who will be most receptive to what they are taught; while at the same time maintain a level of fairness in the whole process.

While there are CLCs that rely on roll number based selection, some have moved away from the process because they noted that the students who are otherwise academically gifted are not always the stellar performers in the CLP course. Rather, it is the inquisitive, the restless, even the mischievous who outperform his or her peers. CLP teachers often say that it takes a certain amount of willingness to experiment beyond what he or she teaches to really maximise what they get out of the CLP course.

xiv. A Conversation:

Mrs. Zohra of the Kaji Jalal Uddin Girls High School in Sylhet is one of the most active and well-respected CLP teachers currently involved in the programme. The conversation we had with her is well representative of the thoughts and concerns of many of the teachers, and is included below.

"The first 70 students were given forms. These are 70 students out of 300. Of those who could not get into this group of 70, about 40% of them brought their guardians to petition for them. Even guardians of students from other schools come and ask if they can learn in exchange for a fee.

The thing is, parents will not send their girls to any environment to learn about computers, or anything else for that matter. This school has the necessary requirements that create an acceptable environment for them. In fact, 9 out of 10 have no other place to go and learn about computers. They will pay 100 to 200 taka for the opportunity to come and learn because they could not get into the CLP course. Those who have graduated also want to come back and practice, and they say they would feel proud to do so.

The CLP course has helped the students because there are no practical sessions for the SSC computer course. Even if there are computers in the other schools, they are told that there is no need to use it. In my mind, the big difference is SSC Computers is totally theory, while the CLP course is totally practical.

In 16 days, they learn just enough to get acquainted with the computer. It gives them the confidence to pursue further use of computers. The interesting thing is, I often notice that students who are weaker in other subjects are very good at computers, and those who are otherwise really smart academically perform poorly in the CLP course.

Unfortunately, they do not always get the necessary practice. A few more computers would be good. They should be doing a 32 hour course over 16 sessions, but we can't start before 9am, and they have class at 10.30 am. Sometimes there is no electricity, sometimes the keys go missing. There are so many impediments that it's impossible to ensure the requisite number of hours. There should also be some kind of encouragement through gradation of certificate.

They do not return to practice because they are not allowed to. When the course is running, they go into the room whenever they have a chance. They take care of the CLP room. They leave their shoes outside even when the teacher is not there. But the problem is the authority. The computer lab is kept closed too often. They aren't allowed to practice, even though

they want to. This is particularly unfortunate, because students would be willing to come in as temporary teachers, without a stipend.

There is also too much load on the teachers because the same teachers are sent for different trainings. I had proposed that other teachers learn how to use computers, to write up their grades, for example. They are reluctant to do so.

What you see with regards to the CLP course is part of a larger conflict between the old and the new, where the old want to keep their old ways. This battle is seen in teaching English too – between the communicative approach, and the grammatical approach. Teachers are more scared of computers than the students. The school does not have any Bangla keyboards, so the students could not learn typing in Bangla. We have requested the school authority on numerous occasions, and they said they will arrange for it, but it's been six months and nothing has come of it so far. The students even proposed that they pay for it so that they could learn.

There are abundant resources in the school. The VAB-NJ sponsor was not given any attention in the government school. Then, she came here. The donor wants to know what else can be done. The possibilities are many, but it really depends on the authorities."

Chapter 5: Head Teachers

Head teachers of only the CLP schools were interviewed. 10 head teachers and one assistant head teacher were interviewed during the survey phase of the study. The assistant head teacher was interviewed because the head teacher in the school was also the CLP teacher, and therefore an additional survey was taken with his assistant. The head teacher himself completed both a head teacher's survey, and a CLP teacher's survey.

i.   Group Profile:

All the 11 head teachers we talked to during the surveys were male.

6 of the respondents were head teachers of schools that offered the SSC Computer course, and 5 were head teachers of schools that did not.

ii.   Familiarity with Students who Take CLP Course:

The head teachers were asked how familiar they are with students who take the CLP course. This was asked to gauge the reliability of their judgement on those students. 4 teachers found the recently admitted students to be not familiar at all, 10 found them to be vaguely familiar, 4 as somewhat familiar, 1 as familiar, and 1 as very familiar.

iii.   Evaluation of Teaching in CLP course:

The head teachers were given 4 pairs and one trio set of sentences, and were asked to choose one sentence from each pair/trio that best matched their experience with respect to the teaching in the CLP course.

Assessments	Count
They teach well	4
They could have done a better job	6
They are generally very helpful	9
They are generally not very helpful	1
They are knowledgeable	8
They are not qualified	2
They make classes interesting and fun	9
They do not make classes interesting and fun	1
Teachers were mostly encouraging	9
Teachers were mostly discouraging	0
Teachers were neither encouraging nor discouraging	1

It should be noted that the responses are quite subjective. Follow-up discussions with those who have identified shortcomings will help identify the reasons for such appraisals.

iv.   Effect of CLC on Enrolment and Transfer Patterns:

Given the novelty of a programme like the CLP course in and around the communities that host them, it has been suggested that its presence has encouraged parents to enrol their children in these schools so that they may take advantage of a computer education. The head teachers were asked if their experience agreed with this suggestion.

It should be noted that the schools do not have records on the reasons or motivations for enrolment and transfer to a particular school, and therefore the assessments by the head teachers are purely based on anecdotal evidence.

10 head teachers believe that the presence of the CLC caused enrolment to increase in their schools, while 1 believed that it did not. 6 head teachers believe that some students have transferred to their schools because of the presence of the CLC, while 5 do not believe that this is the case.

The word for 'enrolment' in Bengali implies those who have not been to school before and are first time entrants into the school system, while the word for 'transfer' in Bengali, as in English, implies prior enrolment in a separate academic institution. Understandably, there are opportunity costs associated with moving out of a school and entering a new one that make transferring to a school with CLCs less desirable compared to those who are looking for a school to enrol in.

Discussions with the CLP teachers attest to this assessment made by the head masters. They note that while some parents have a negative reaction to the fact that there are computers in the school, most are positive, especially when they see the reaction of their children towards computers .

In one rural school in Sirajganj, there used to be between 500 and 550 students, and now there are 700. Parents are attracted to the fact that there are computers in the school, desptie the rural setting. While this creates pressure on the school to accommodate a greater number of students in the CLP course, teachers consider this to be a big positive thing.

This change in the perceived quality of the school by the parents is also evident in not so rural schools as well. In a school in Sirajganj town, that performs well on a national level, a teacher noted, "The school is good already. With computers, it just got better."

v.   Effect of the CLC on School :

Head teachers were asked to recount how the presence of the CLC has helped the school in its activities outside the scope of the CLP course itself.

The schools seem to derive maximum utility from the CLC by using the facilities in it to increase the efficiency of activities, that would either be done manually, or through a vendor, where the former taxes the school's time, and the latter, the school's financial resources.

Generally, schools use the computers to compose and print any official documents, prepare internal exam papers, and perform calculations related to grades and result sheets. The head teachers feel that this has improved the communication within various offices by making it easier to share information, enabled to index information related to the school, and improved official correspondence. One head teacher noted how they had utilised the computers in his school to create lists of the students eligible for the upabritti, which has hastened the otherwise lengthy process. (The upabritti is an allowance for students outside metropolitan areas, generally for female students up to grade 12, and students of both gender depending on their eligibility based on certain criteria. It is designed to increase enrolment in schools.)

All these tasks are possible both in English and Bangla, given that all the CLC computers are Bangla enabled. This fact has greatly facilitated the adoption of computers to assist in various school activities.

Head teachers also feel that its use has aided the vocational students, and helped students score better in SSC Computers. One head teacher told us about three students who scored an unprecedented 3 A+'s last year, which has enhanced the name of the school.

A general increase in the students' interest to learn about computers has also been reported. A head teacher noted, "The students can now be better aware of modern thoughts and learning."

In one school, teachers who teach other courses are taking initiative to learn about computers, so that if a CLP teacher is absent, they are able to fill in for them.

The head teachers were also asked if the presence of the CLC interfered with the operations of the schools in any way. None of the 11 said that it did.

In response to another question, all 11 head teachers said that they felt that the presence of the CLC has increased the prestige and acceptability of the school in the community.

"The environment of my school has improved as a result of D.Net getting involved with us," said one head teacher with satisfaction, while making an overall assessment of the impact of the presence of CLC in the school.

vi.   Response to Computers:

The 15 adjectives that students were asked to gauge their reactions against were also presented to the head teachers. They were asked to note which of these adjectives described the reactions to computers they would often see in students.

Adjective	Response Count	Adjective	Response Count
Amazed	6	Nervous	-
Annoyed	-	Overwhelming	-
Awkward	-	Pleased	9
Dumb	-	Self-conscious	5
Eager	3	Uncertain	-
Excited	-	Uncomfortable	-
Frustrated	-	Upset	-
Great	6		

More than half the head teachers noted that students felt "amazed", "great", "pleased", and "self-conscious", and some found them to be "self-conscious", and "eager". The order of these adjectives is quite the same as they were for the students themselves. If is encouraging, that the head teachers seem to be able to gauge the predominant reactions of the students well.

None of the head teachers noted a single adjective with a negative connotation, which, as we have seen earlier, does not correspond to the reaction of the students. "Annoyed", "awkward", "nervous" and "upset" are reactions that polled about a 10% response from students, but as with the CLP teachers, this is not reflected in the head teachers' response. The head teachers too therefore do not seem to be able to gauge these negative reactions well.

vii. Intention to Take SSC Computers, and Impact of the CLP and the CLC:

The 11 head teachers were asked if the presence of the CLC has affected the students' decision to take SSC Computers. 7 said that it had affected that decision "greatly", 2 felt that it had affected it "somewhat", 1 felt "not at all", and 1 did not respond to the question.

When asked if taking the CLP had helped students prepare for SSC Computers, 6 felt that it had helped the students "a lot", and 2 felt that it had helped them "somewhat". Nobody felt that it did not help them at all, but 3 teachers abstained from responding.

(It should be noted that while the school may not offer the SSC Computers course, students in the school may still opt to take it.)

viii. Difference Between Boys and Girls in Response to CLP Programme:

The head teachers were also asked if they noticed a difference in the way the male students responded to the CLP programme compared to the female students. In particular, they were asked if they noticed a difference in any of the following: (a) Ability, (b) Comfort, (c) Confidence, (d) Enthusiasm, and (e) Interest. The response was as follows:

Difference in the way boys and girls responded to the CLP programme with respect to:	"Yes" Count
Enthusiasm	7
Interest	7
Confidence	6
Ability	6
Comfort	5

Of the 11 head teachers, 9 said that they had noted a difference in at least one of the categories, 2 said they did not notice any differences in any of these categories.

According to the teachers, there is no consistent pattern on which gender performed better regarding any of the five qualities :

Difference in the way boys and girls responded to the CLP programme with respect to:	Boys show more of it	Girls show more of it	Gender not noted
Enthusiasm	1	2	4
Interest	1	3	3
Confidence	2	1	3
Ability	2	1	3
Comfort	1	1	3

One of the two points that were noted by the teachers also applies here – while a fair number of head teachers noted a difference in at least one of the five behavioural characteristics, most of them did not mention which gender performed more, despite being asked to do so.

On the other hand, while teachers in aggregate noted that boys showed more interest, enthusiasm, confidence, comfort and ability than girls; this was not the case with head teachers – for some attributes, boys were noted to show more of it, while for others, it was girls.

Moreover given that these numbers are in the single digits, they should not be treated as anything more than anecdotal.

ix. Level of Collaboration:

Head teachers were asked if the level and nature of collaboration between students in the CLP course was similar in the other courses as well. 9 head teachers noted that the nature and level of collaboration is the same, and 2 noted that it was not the same.

Head teachers have received reports of students filling in for their teachers either when they feel tired or are too over worked, and that this contribution is welcomed by their peers.

x. Pace of Learning:

Head teachers were asked how often they were "pleasantly surprised" by the pace at which students learn about computers, since teachers have expressed surprise at how quickly many students pick up or learn the course material.

5 head teachers were very pleasantly surprised, indicating that students outperformed their expectations by a wide margin. 6 head teachers noted that they were pleasantly surprised some of the time. None of them felt that pace of learning was as expected, or that they were disappointed at their pace of learning.

xi. Limitations to CLP Course:

The teachers were asked if they felt that there were any limitations to learning computers through the CLP course.

9 head teachers felt that there were limitations to learning computers through the CLP course, while 2 felt that there were no such limitations.

Same of the limitations they identified were similar to those of the students, their guardians and/or the CLP teachers:

- There aren't enough computers

- The time of the course is short

- There is no opportunity to practice after the completion of the course

- The computers are of really old models, which often result in break down

Some additional limitations were expressed by the head teachers:

- The electricity bill is significantly affected

- Students received a basic idea about computers only, nothing substantial

- Financial constraints prevent investing more time and energy into the CLP

- The CLP teachers seem to need more training

- There is a lack of trained technicians to maintain the computers

- The CLP teachers need to be involved in the administration of the CLC

It should be noted that none of the points were mentioned by all the head teachers, and many were mentioned by only one. Therefore, what is identified as a limitation by one head teacher may not necessarily be a limitation present in the school of another head teacher.

Suggestions were made by the headmasters about what could be changed about the operations of the CLC:

- Students who do well should receive recognition and reward

- There should be some kind of competition between CLP batches

- The number of inspections from D.Net should be increased

- Teachers should be given more training

- Local authorities should look into the possibility of funding the CLP course so that it is free of cost for the school

- The course could be opened to students who are not in this school, as a way of financially supporting the CLC

- The students could be taught math, science, physics etc. using the CLC computers

xii. Evaluating VAB-NJ's Contribution:

The head teachers were asked how they evaluated the participation of expatriate Bangladeshis, given that the CLCs have been set up with support from VAB-NJ.

"I thank them enormously for this great endeavour. Even those students who had never heard about computers are now learning about them," said one head teacher.

"We are very grateful to this initiative by expatriate Bangladeshis. I think this has definitely enhanced the image of our country," said another.

"I welcome and applaud this initiative by expatriate Bangladeshis. I hope that they will remain beside us and help us implement similar programmes," noted another.

In our discussions, we have found that the school authorities greatly appreciate the fact that expatriate Bangladeshis are sponsoring the CLCs. It gives the community a sense of pride that their sons and daughters have not forgotten about them even though they are half a world away. This increases the prestige of the school.

It has also created a sense of belonging for the students that complements their interest and involvement with the CLC.

"Our students do not have role models in our own *communities,"* commented one head teacher. *"But when they see someone from this community succeeding in America and giving back to their school, it inspires them to emulate that achievement. And it inspires us to continue what we do, knowing that when they grow up, they will not forget us."*

Chapter 6: Guardians

Guardians of the students who have already taken the CLP course or are currently taking it were interviewed. Since many guardians either do not have the time to keep track of their child's studies, or are illiterate and hence are unable to do so, only those were invited who, based on the testimony of teachers and students, were knowledgeable at least to some degree about the student's academic experience. Guardians included parents and elder siblings.

The students were not present when the guardians were interviewed.

i. Group profile:

48 guardians of CLP students were interviewed. The following is a profile snapshot:

Category	Sub-Category	CLP School Count
Gender of Student	Male	23 (48%)
	Female	23 (48%)
	No response	2 (4%)
Grade of Student	Class IX	19 (40%)
	Class X	20 (41%)
	Other (Note I)	9 (19%)
Relation to Student	Father	27 (57%)
	Mother	12 (25%)
	Elder brother	3 (6%)
	Elder sister	2 (4%)
	Other (Note II)	2 (4%)
	No response	2 (4%)

Notes:
I: "Other" includes classes VII and VIII (grades 7 and 8) and a few students who had graduated from class X, but were still around after giving their SSC exams.
II: "Other" refers to guardians who did not indicate their relationship to the student

ii. Familiarity with computers:

The guardians were asked how familiar they themselves were with computers. This was asked to gauge the perspective from which they made their assessments with respect to their background in IT.
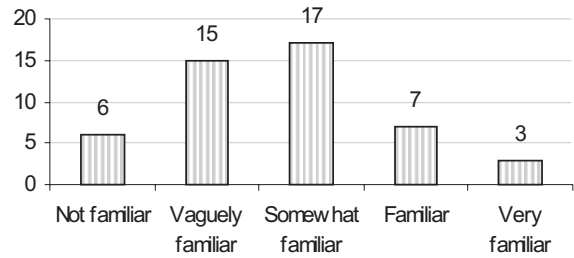
Graph 69. Familiarity of guardians with computers.

N = 48

Explanation of degrees of familiarity:
1. Not familiar – don't really know what they are
2. Vaguely familiar – have had heard about computers, but don't understand what they do
3. Somewhat familiar – understand what they do, but haven't used them
4. Familiar – have used them a few times
5. Very familiar – use them often

10 out of 48 guardians have used computers before; all the guardians who were interviewed were pre-screened for acquaintance with their child's.

iii. Frequency at which Information is Shared by Students at Home:

The guardian was asked if the student discussed about learning computers in the CLP course, at home. This question was asked to gauge the familiarity of the guardian with what the student is learning in school.

Does your child talk about learning computers in the CLP course, at home?	Count
Yes, often	35 (73%)
Yes, some of the time	12 (25%)
No, never	1 (2%)

"She was very happy the first day she wrote her own name. She came and talked about it at home," said one guardian.

"My daughter is very amused with new words [i.e. computer jargon]. She comes home and tells me about them," said a mother.

Another mother told us, *"My daughter once drew quite badly, and her friends laughed at her. This made her feel very embarrassed.".*

iv. Response to Computers:

The 15 adjectives that students were asked to gauge their reactions against were also presented to the guardians. They were asked to note which of these adjectives they would use to describe the students reaction to computers.

Adjective	Response Count	Adjective	Response Count
Amazed	32 (67%)	Nervous	1 (2%)
Annoyed	-	Overwhelming	1 (2%)
Awkward	1 (2%)	Pleased	40 (83%)
Dumb	3 (6%)	Self-conscious	18 (38%)
Eager	10 (21%)	Uncertain	-
Excited	5 (10%)	Uncomfortable	-
Frustrated	-	Upset	1 (2%)
Great	20 (42%)		

More than half the guardians noted that students felt "amazed" and "pleased", more than a third felt "great" and "self-conscious", and more than a tenth found them to be "eager" and "excited". The order of these adjectives is quite the same as they were for the students themselves. It is encouraging, that the guardians seem to be able to gauge the predominant reactions of the students well.

Some of the guardians also noted some negative reactions, selecting "dumb", "awkward", "nervous", "overwhelming" and "upset". None of the guardians found the students to be "annoyed", "frustrated", "uncertain" or "uncomfortable".

The responses of the students has an effect on the parents too. One mother told us how her daughter comes home every day and talks about what they did in the computer class, and this makes her want to learn about computers as well.

Some students become so interested to learn about computers that they ask their parents to buy them computers. This is however very often not possible because of the economic circumstances. One father told us with a lot of sadness, "My daughter wants a computer, but I simply cannot afford it." Some guardians also ask us if D.Net has any plans to make computers available for students at a subsidised price.

v. Effect of the CLP course on Math, Bangla and English:

Guardians were asked if they thought the CLP course helped the students do better Math, and read and write better Bangla and English. Most of the guardians either strongly agreed or somewhat agreed that there is an effect of the CLP course on Math, Bangla and English:

Statement	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree	No Opinion
The CLP course helps CLP students read and write better English	29	14	2	2	0	1
The CLP course helps CLP students read and write better Bangla	20	17	3	5	0	3
The CLP course helps CLP students perform better in maths	20	13	11	2	2	0

vi. Effect of Computers on Students'Behaviour:

The guardians were asked if they noticed a change in their child's attitude in a computer environment. In particular, they were asked if they "strongly agreed", "somewhat agreed ", "neither agreed nor disagreed", "somewhat disagreed", or "strongly disagreed" with statements that are given below, with responses:

Statement	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree	No Opinion
My child feels confident in a computer environment	31	8	6	1	1	1
My child feels comfortable in a computer environment	31	11	5	0	0	1
My child feels enthusiastic in a computer environment	32	10	4	1	0	1
The self -confidence of my child does not seem to have increased after taking the CLP course	12	1	3	5	26	0

Most of the guardians either agreed strongly or agreed somewhat that the students look confident, comfortable and enthusiastic in a computer environment.

About a quarter of the guardians, however, did agree with the assertion that students' self-confidence has not increased. It should be noted that this is the same proportion as it was for teachers who generated a similar response.

vii. Limitations about Learning Computers through the CLP Course:

Guardians were asked if they felt that there were any limitations to learning about computers through the CLP course. 13 guardians felt that there were limitations to learning computers through the CLP course, while 34 felt that there were no such limitations. 1 did not respond.

Many of the limitations they noted resonated with what has been pointed out by the students and teachers, such as lack of computers, less teaching time, irregularity of classes and such.

Some limitations were noted by the guardians only, or particularly emphasised by them:
- Some teachers do not give adequate time
- Students do not come home regularly when the CLP classes are going on even after the school is over, which at times worries the parents and guardians

- Students feel disappointed in having to use old computers
- The small number of computers is a particular impediment to female students learning computers

With limitations in mind, some suggestions were also made:
- The computer teacher should be given refresher trainings periodically
- D.Net should discuss about computers with students as often as possible
- Various initiatives can be started in the classroom that are related to computers, such as using computer-based educational tools to learn Math, and English, and connecting the computers to the internet.
- D.Net should inspect the CLCs periodically – this will make the teachers conscious and encourage them to teach better
- D.Net should administer tests to the students periodically
- The CLP course should be treated as a regular course by the school
- Enough computers should be arranged to allow all students to take the CLP course

It should be noted that none of the points were mentioned by all the guardians, and many were mentioned by only one. Therefore, what is identified as a limitation by one guardian may not necessarily be a limitation to another guardian.

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Appendix A: Geographical Distribution of Computer Learning Centres (CLCs)

Appendix B: Student profiles from CLP and non-CLP schools

i) Gender Profile:
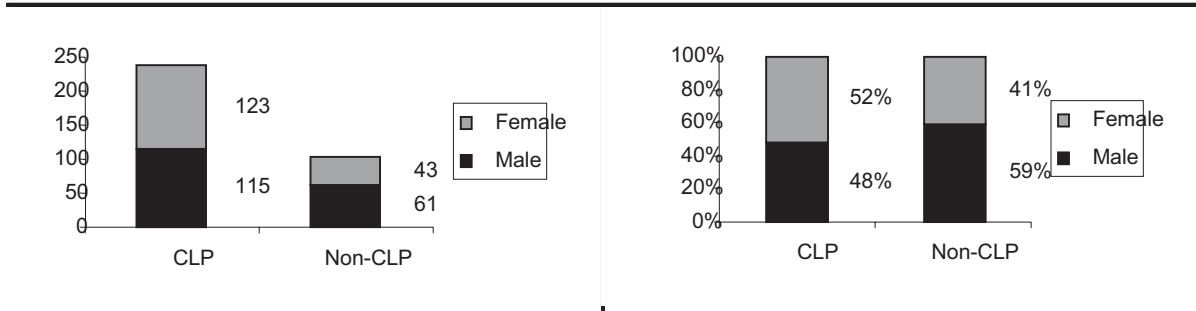
ii) Grade:

iii) Places of Use:
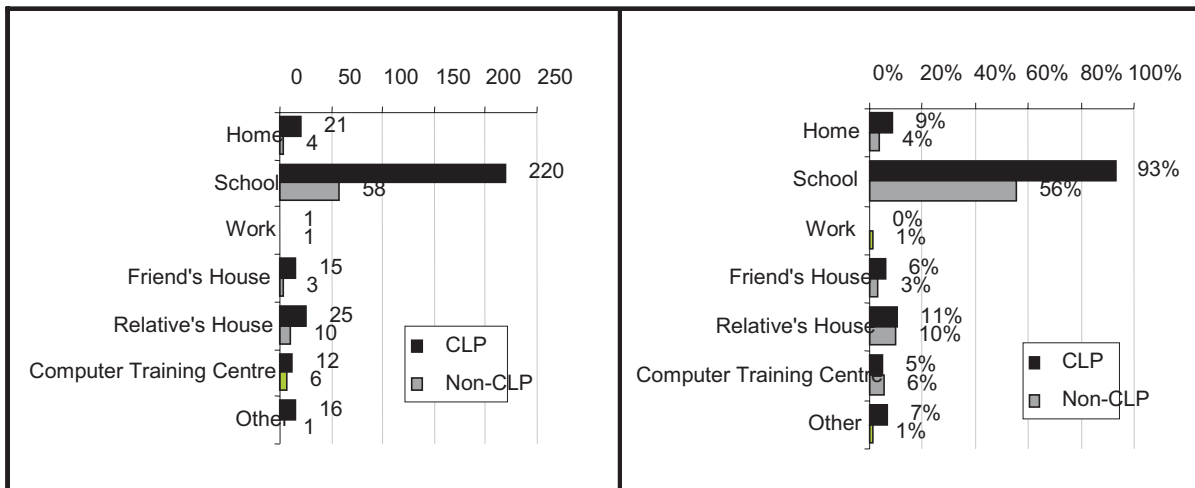
iv) CLP Course Status *(aggregate)*:

- Already taken
- Currently taking
- Will take
- Have no intention of taking

26, 11%   4, 2%
76, 32%   131, 55%

v) Operating System Used:

- None
- Other
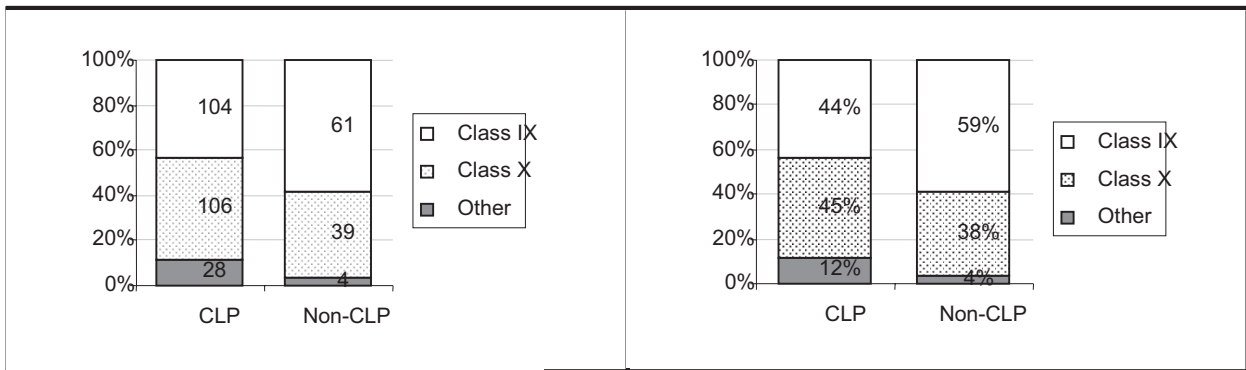- Window s XP
- Window s 2000
- Window s NT
- Window s 98
- Window s 95
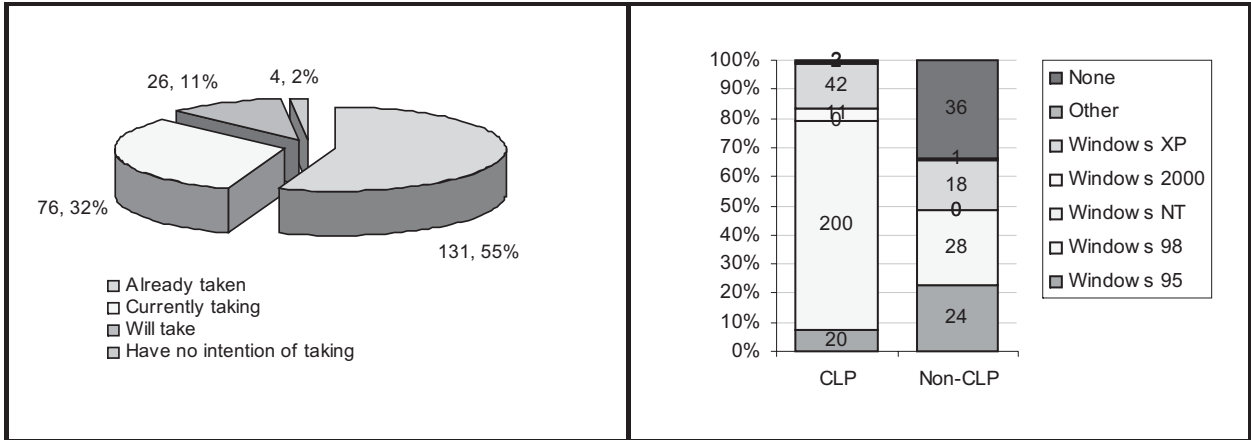
Appendix C: Familiarity with Computers

i) Comparison of assessment of familiarity, by pre-CLP students[1] and non-CLP students[2]:
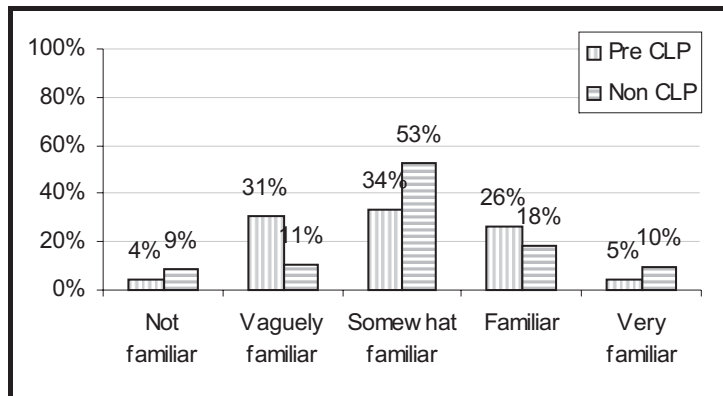
ii) Comparison of assessment of familiarity, by course status:

*Current familiarity with computers **before and during** the CLP course for those who **are currently taking** the CLP course.(N=130)*
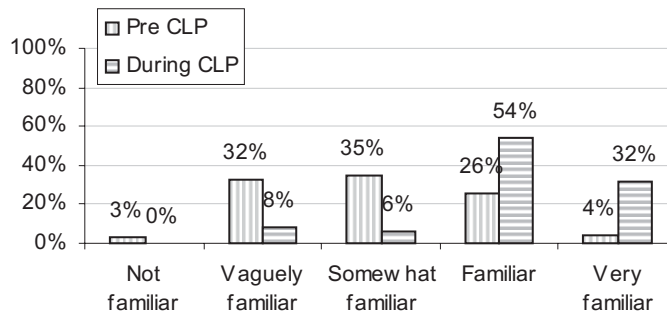
[1] Those who are in a school that offers the CLP course and who intend on taking it
[2] Those who are in schools where the CLP course is not offered

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*Current familiarity with computers **before and after** the CLP course for those who **have completed** the CLP course. (N = 74)*
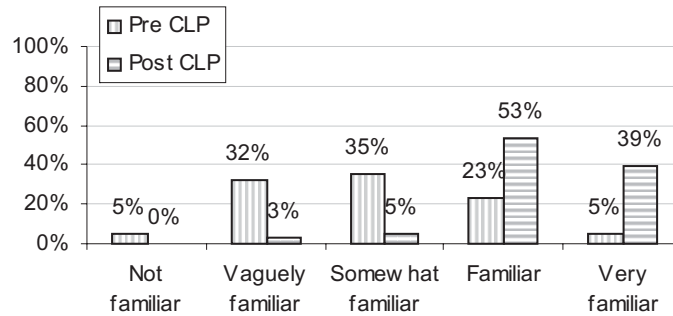
iii) Comparison of assessment of familiarity, by course status and gender:

Current familiarity of computers, by gender, for those who are currently taking the CLP course. (N_{Male} = 32, N_{Female} = 42)
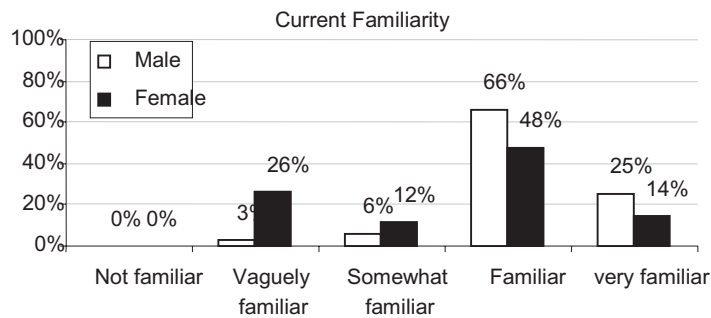
Current familiarity of computers, by gender, for those who have already taken the CLP course. (N_{Male} = 73, N_{Female} = 57)

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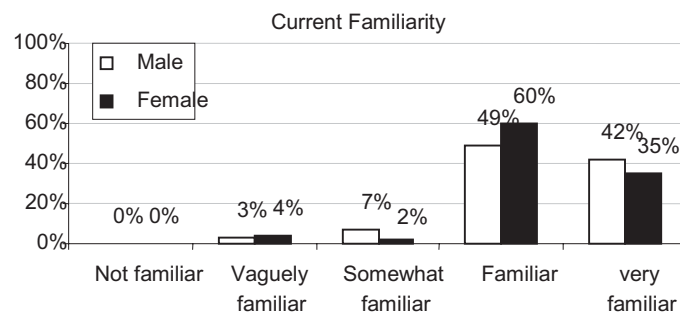
iv) Comparison of assessment of familiarity, by location:

*Familiarity with computers **before** taking the CLP course for students from rural and urban areas. (N_{Rural} = 166, N_{Urban} = 39)*

Pre-CLP chart (Rural, Urban):
- Not Familiar: 4%, 3%
- Vaguely Familiar: 34%, 25%
- Somewhat Familiar: 34%, 38%
- Familiar: 24%, 33%
- Very familiar: 4%, 3%
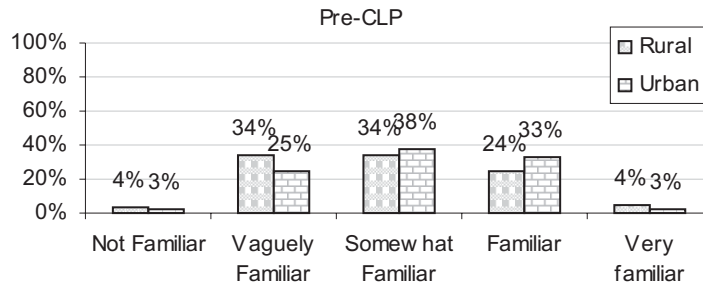
Familiarity with computers after taking the CLP course for students from rural and urban areas. (N_{Rural} = 165, N_{Urban} = 40)

Post-CLP chart (Rural, Urban):
- Not Familiar: 0%, 0%
- Vaguely Familiar: 8%, 5%
- Somewhat Familiar: 5%, 10%
- Familiar: 52%, 64%
- Very familiar: 34%, 21%
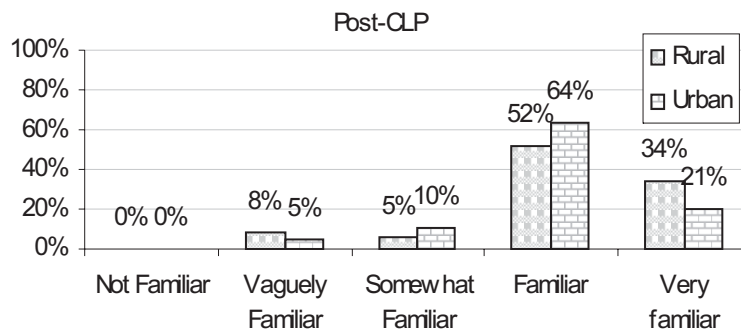
iv) Comparison of assessment of familiarity for rural schools, by gender (N_{Male} = 99, N_{Female} = 66):

Chart (Male, Female):
- Not Familiar: 4%, 3%
- Vaguely Familiar: 34%, 33%
- Somewhat Familiar: 31%, 38%
- Familiar: 27%, 20%
- Very familiar: 3%, 6%

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Appendix D: Proficiency in Computer Use
(N_{CLP} = 217, $N_{Non-CLP}$ = 104) :

	0%	20%	40%	60%	80%	100%

- Compose a document — CLP School 82%, Non-CLP School 33%
- Print a document — CLP School 50%, Non-CLP School 14%
- Create a table — CLP School 55%, Non-CLP School 25%
- Perform spreadsheet calculations — CLP School 43%, Non-CLP School 13%
- Turn computer on and off — CLP School 94%, Non-CLP School 45%
- Install new program — CLP School 18%, Non-CLP School 4%
- Perform basic troubleshooting — CLP School 36%, Non-CLP School 10%
- Open webpage — CLP School 12%, Non-CLP School 2%
- Send email — CLP School 10%, Non-CLP School 10%
- Search for info on web — CLP School 11%, Non-CLP School 9%
- Create a webpage — CLP School 3%, Non-CLP School 1%
- Know a programming language — CLP School 10%, Non-CLP School 0%
- Use Adobe Photoshop — CLP School 5%, Non-CLP School 0%
- Make Flash Animation — CLP School 1%, Non-CLP School 0%
- Create database — CLP School 6%, Non-CLP School 8%
- Play computer games — CLP School 65%, Non-CLP School 20%

Legend: ■ CLP School   ■ Non-CLP School

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Appendix E: Reaction to Computers

i) Distribution of response count for adjectives that describe reaction to computers, aggregate *(N=240)*:

X-axis: Proportion of Respondents Choosing A Certain Number of Adjectives
Y-axis: Number of Adjectives Chosen

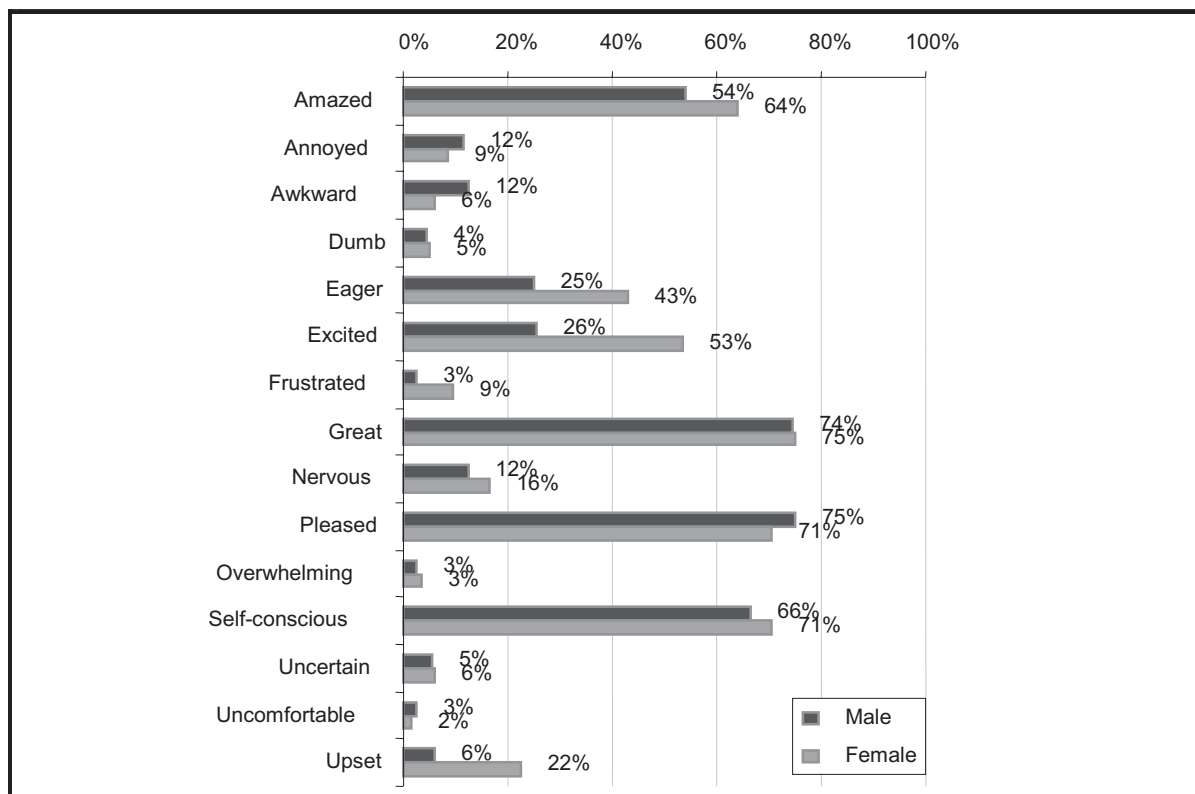| Number of Adjectives Chosen	Percentage
13	0%
12	0%
10	0%
9	3%
8	2%
7	6%
6	13%
5	13%
4	24%
3	15%
2	5%
1	15%
0	4%
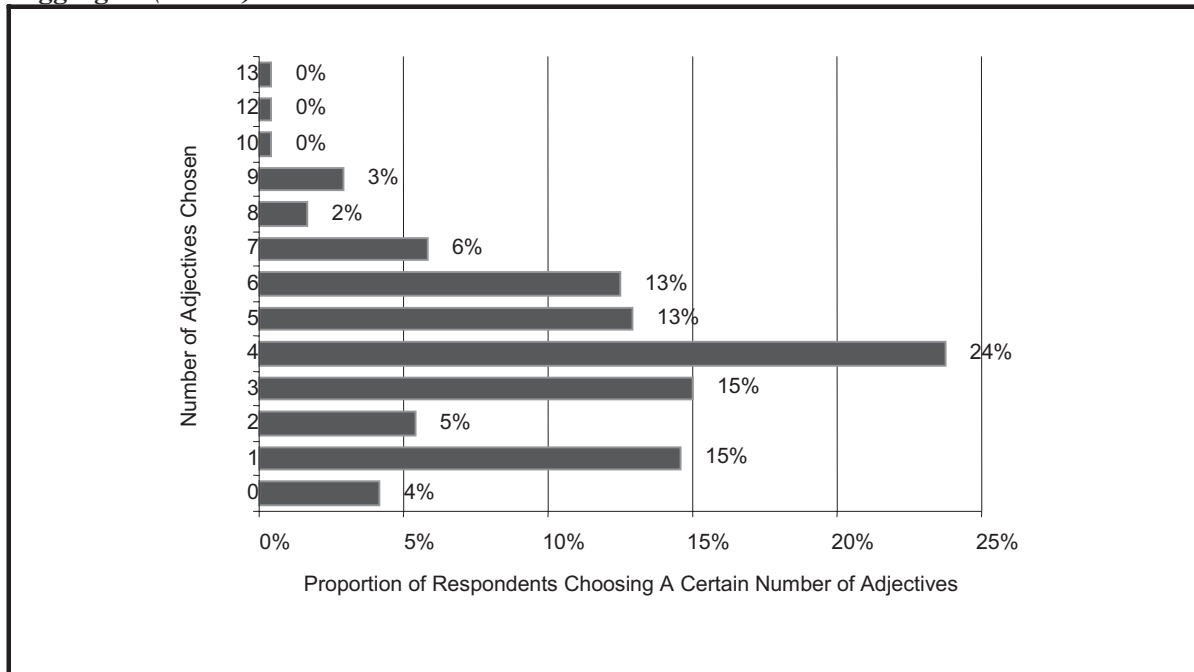
ii) Responses by gender *(N_Male = 113, N_Female = 116)*:

Adjective	Male	Female
Amazed	54%	64%
Annoyed	9%	12%
Awkward	6%	12%
Dumb	4%	5%
Eager	25%	43%
Excited	26%	53%
Frustrated	3%	9%
Great	74%	75%
Nervous	12%	16%
Pleased	75%	71%
Overwhelming	3%	3%
Self-conscious	66%	71%
Uncertain	5%	6%
Uncomfortable	3%	2%
Upset	6%	22%

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Appendix F: Students' assessment of CLP course

i) Aggregate:

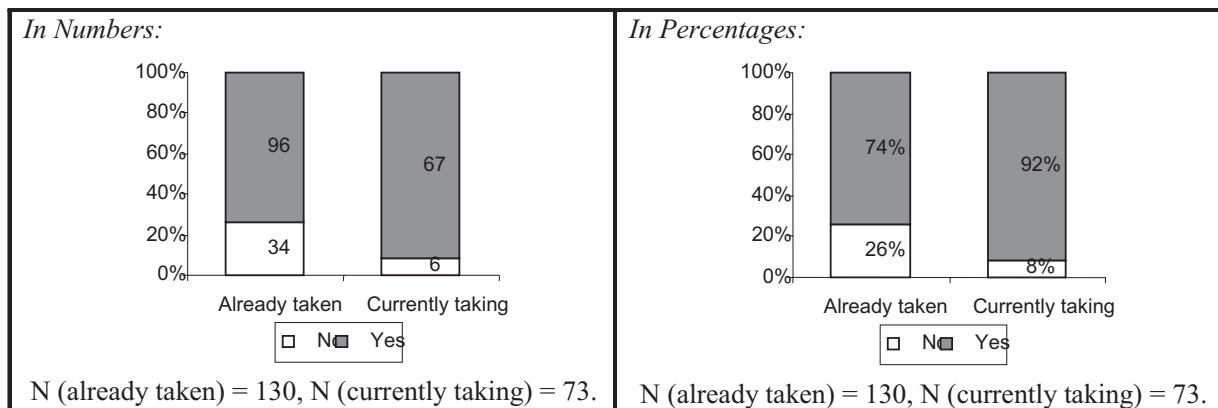| Statement Sets	N	%
Teachers were good	180	81%
Teachers could have done a better job	41	19%
Teachers made me understand	215	99%
Teachers were not helpful	3	1%
I learnt a lot from the CLP course	189	88%
I did not learn much from the CLP course	25	12%
CLP course was interesting and fun	216	100%
CLP course was not interesting and fun at all	1	0%
Teachers were mostly encouraging	211	96%
Teachers were mostly discouraging	2	1%
Teachers were neither encouraging nor discouraging	7	3%

ii) By Gender:

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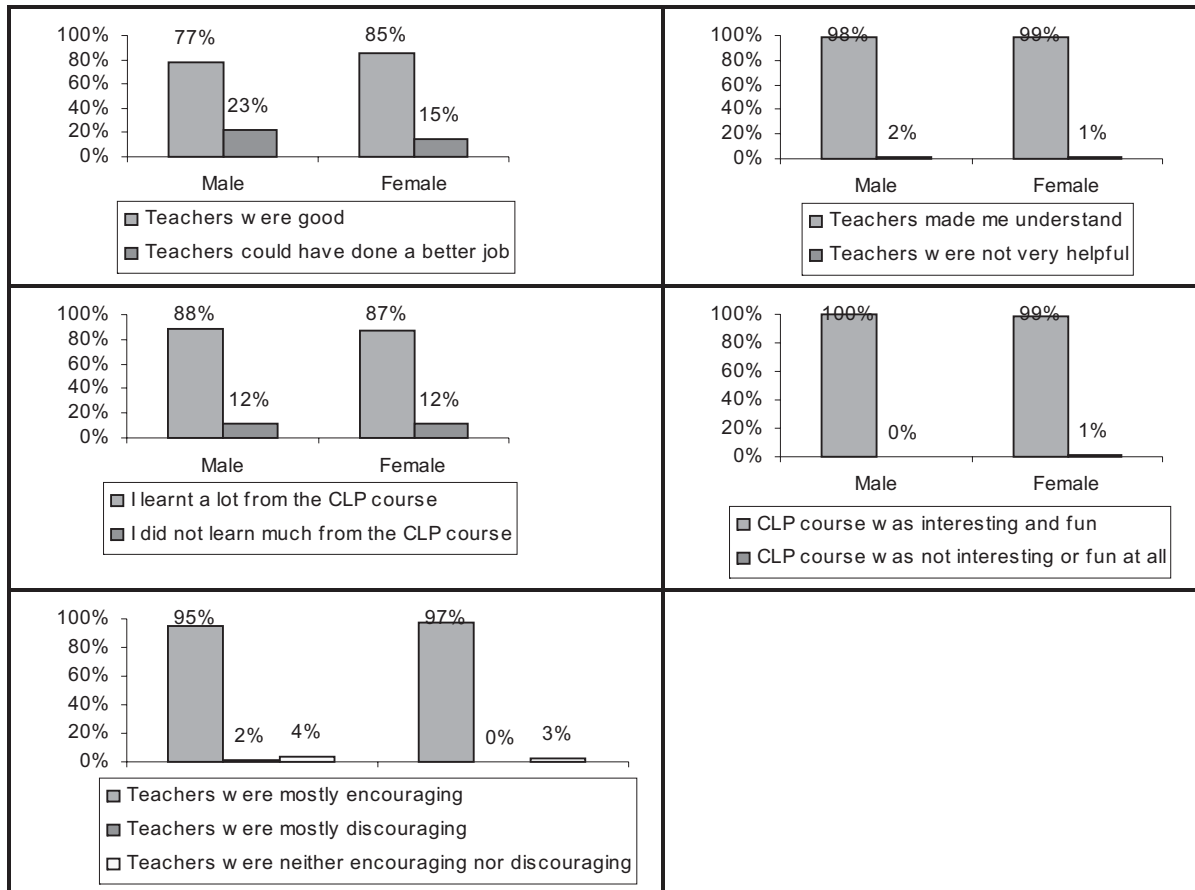
Appendix G: Working with each other

i) Aggregate:

In Numbers:

In Percentages:
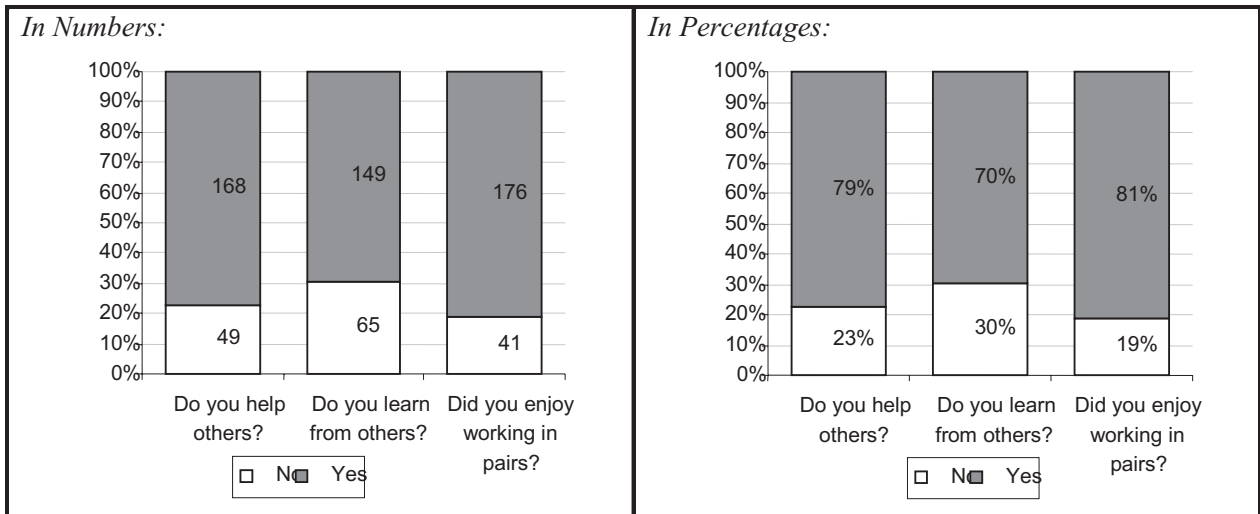
ii) Enjoyment in working in pairs:

In Numbers:

N (already taken) = 130, N (currently taking) = 73.

In Percentages:

N (already taken) = 130, N (currently taking) = 73.

Appendix H: Sharing the CLP experience

i) Aggregate:

Frequency of sharing information about CLP with peers:

N (already taken) = 129, N (currently taking) = 72

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ii) By Gender and Course Status:

*Frequency of sharing information about CLP with peers for **male** students:*

N (already taken) = 74, N (currently taking)= 32

*Frequency of sharing information about CLP with peers for **female** students:*

N (already taken) = 55, N (currently taking)= 40
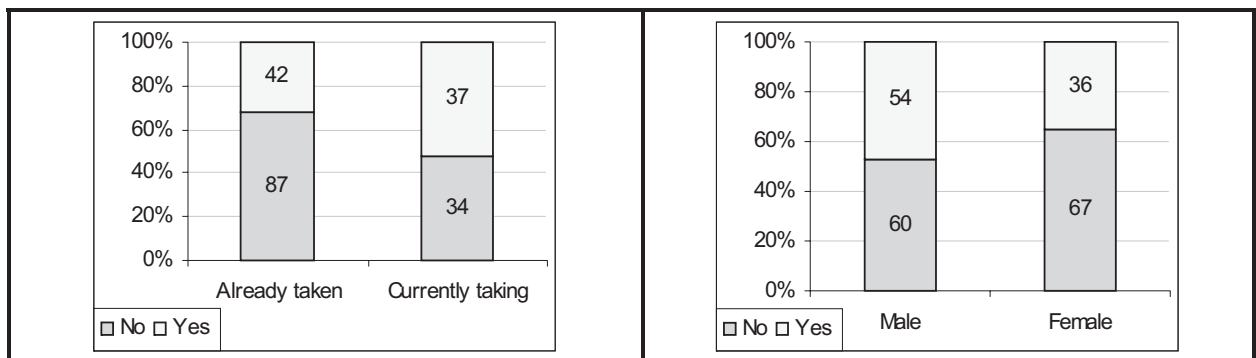
Appendix I: Intention to take SSC Computers, and impact of CLCs

i) CLP vs. non-CLP schools *(N$_{CLP}$ = 232, N$_{Non-CLP}$ = 103)***:**

ii) Effect of presence of CLC *(N = 147)***:**
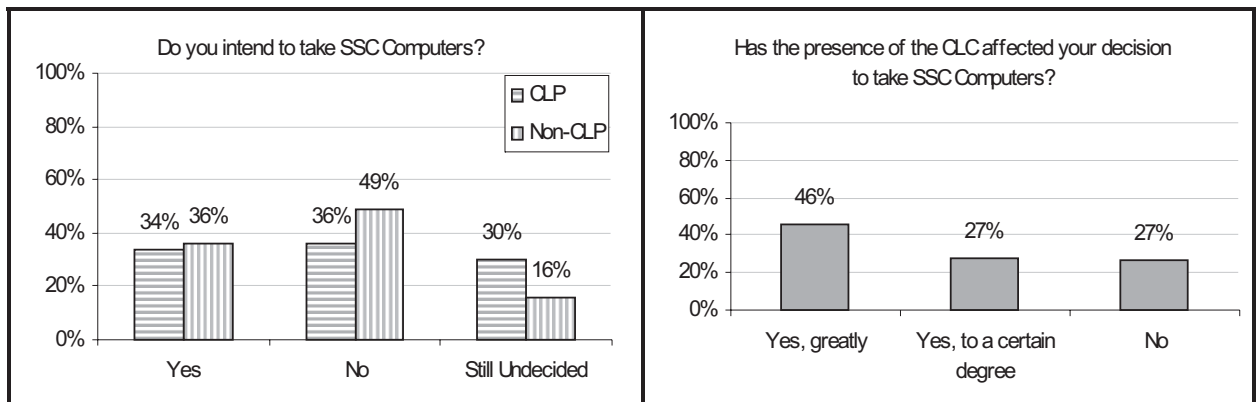
Appendix J: Limitations of the CLP course – are there any?

i) Aggregate *(N$_{(already\ taken)}$ = 129, N$_{(currently\ taking)}$ = 71)***:**

ii) By Gender *(N$_{Male}$ = 114, N$_{Female}$ = 103)***:**

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About the Author

Ashirul Amin is a 2nd year graduate student at The Fletcher School of Law and Diplomacy at Tufts University, focusing on Development Economics and International Communication as his fields of study. He received his B.S.E. in Computer Science from Princeton University, with a concentration in Robotics and Intelligent Systems. He has worked with ALK Technologies as an Analyst and Developer on real-time GPS navigational systems. He is also a Founding Trustee of SPARKS International, where he has coordinated its internship programme in Argentina, Mexico and Paraguay, and maintains the NGO's information technology and communication framework. He is currently working as a Marketing Assistant for a newly released book, "You Can Hear Me Now", that focuses on mobile telephony and development.

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