USAID's Growth with Equity in Mindanao (GEM 3) Program

Computer Literacy Internet Connection (CLIC) Project Impact Assessment Study

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List of Acronyms

ARMM	Autonomous Region in Muslim Mindanao
CAMM	Conflict-affected areas In Mindanao
CLIC	Computer Literacy and Internet Connection
DepEd	Department of Education
DMT	Data Management Team
FGD	Focus Group Discussion
GEM	Growth with Equity in Mindanao
GIS	Geographic Information System
GRP	Government of the Republic of the Philippines
KIIs	Key Informant Interviews
NHS	National High School
NSAT	National Secondary Achievement Test
PTA	Parent-Teacher Association
USAID	United States Agency for International Development
USG	United States Government

FOREWORD

The Computer Literacy and Internet Connection (CLIC) Project, implemented under USAID's Growth with Equity in Mindanao (GEM) Program (Phases 2 and 3), was intended to support efforts of the Philippine Government to increase computer literacy and to accelerate the integration of Internet and computer education in schools. CLIC was designed to help prepare Mindanao's future workforce for a global economy in which information and communication technology skills are essential, as part of the broader objectives of the U.S. and Philippine Governments of helping to accelerate economic development and sustain the gains of peace in Mindanao. The overarching objective of CLIC was to sharply reduce the "digital divide" separating high school students from conflict-affected areas of Mindanao from their peers in other parts of the Philippines and in the Southeast Asia Region.

Over the duration of its approximately eight-year implementation, CLIC provided computer resources, including 4,713 computers, to 921 schools throughout conflict-affected areas of Mindanao. Most partner schools were located in the Autonomous Region in Muslim Mindanao (ARMM) and adjacent conflict-affected areas of Mindanao (CAAM), as illustrated in the map presented on page 17.

CLIC was designed by USAID as a "breakthrough intervention," and was the first project to provide both computer resources *and* Internet connections to schools. While other government agencies and donor programs were also engaged in distributing desktop computers to schools during this period few had, at the inception of CLIC, provided resources to conflict-affected areas of Mindanao and none provided access to the Internet, For the most part, the Internet access provided through CLIC during its initial phases was made possible through the installation of satellite dishes in schools in rural barangays where no other type of access was available.

CLIC provided its partner schools—many of them in small, remote communities— with access to the Internet's vast information and networking resources, connecting their students and teachers to the world. CLIC helped to reduce the technological, cultural, and financial divide that existed between students in the ARMM and CAMM, and students in relatively affluent areas of the Philippines and elsewhere throughout the SE Asia Region and the world.

In 2011, and at the instruction of USAID, GEM commissioned a third-party evaluation to assess CLIC's impact on students, teachers, school administration and communities, by consolidating their perceptions, experiences, insights, and recommendations for similar projects in the future. In addition, the evaluator was charged with the compilation, as possible, of secondary data from the Department of Education.

The impact study covered 225 CLIC partner schools and involved 4,800 respondents drawn from populations of students (3,213), school administrators (295), computer laboratory personnel (894), and parents (398) from across Mindanao. These audiences participated in the study as survey respondents (2250), key informants (400) and focus group discussion (FGD) participants (2150). After subjecting the quantitative data to statistical tests and qualitative data to thematic analysis, essentially the study revealed that:

- CLIC computer resources and Internet connections developed the students' and teachers' skills in basic computer operation and computer software applications (such as Microsoft Word, Excel and PowerPoint);

- CLIC Internet connections allowed students to initiate and maintain with friends, relatives, and other persons of interest through their personal email and social networking accounts;
- More female than male students availed of the CLIC resources in schools, suggesting that CLIC resources and Internet connection had an empowering effect among female students;
- CLIC resources and Internet connections opened more possibilities for the students to exercise their creativity, curiosity, and competitiveness, as indicated by the amount of CLIC-assisted research generated for school projects, the quality of CLIC-assisted schoolwork submitted, and the recognition and awards reaped from CLIC-assisted school competitions;
- CLIC resources and Internet connections also made teaching more effective and efficient, enabling teachers to enhance the content and methodology of their classroom instruction, produce interactive and user-friendly educational aids, and streamline administrative paperwork.
- The basic familiarity with computers and the Internet provided by CLIC prompted students to access computers and the Internet off-campus during their free time or after school hours, indicating their independent motivation to make use of information technology; and
- CLIC partner schools fared better than non-CLIC schools in terms of cohort survival rate and mean percentage scores of students taking the National Secondary Achievement Test (NSAT).

What this impact study indicates is that CLIC has succeeded in helping to develop the computer literacy of high school students in Mindanao, particularly in the ARMM and CAMM. CLIC has also helped to forge stronger partnerships between schools and the Parent-Teacher Associations involved in implementation. Obstacles remain, however; foremost among them being the limited number of computers against the number of students per computer class.

The intermittent conflict in some areas in Mindanao, the unstable supply of electric power in remote areas, the rising student population, and the speed of change in information and community technology all beg for innovative approaches. There are also long-standing issues in the Philippine education sector that make improving school performance a daunting task. These factors will not deter us, but only made us more committed to support Philippine Government in leveling the field for students in Mindanao.

EXECUTIVE SUMMARY

Against the backdrop of episodic violence in Mindanao, USAID-GEM implemented various development programs to accelerate economic growth and consolidate peace in Mindanao. Equitable distribution of benefits from the economic growth is one of the guiding principles of these development programs.

1.1 BACKGROUND AND OBJECTIVES

The Growth with Equity in Mindanao (GEM) Phase 3, a USAID-funded Program, began in January 2008 and is expected to operate until the end of 2012. The Program is implemented throughout Mindanao, with special focus on the Autonomous Region in Muslim Mindanao (ARMM) and other conflict-affected areas of Mindanao (CAAM). The Program has the following components: Infrastructure Development, Business Growth (including Former Combatant Reintegration), Workforce Preparation, and Governance Improvement.

One of the projects under the **Workforce Preparation** component of USAID-GEM is the **Computer Literacy and Internet Connection** (CLIC) **Project**. Before CLIC was conceptualized and began implementation in 2003 (during GEM-2), most students in ARMM and CAAM had no ready access to the Internet. GEM believed that this put students in ARMM and CAAM at a "disadvantage academically, in the job market, and in their understanding of and connection to the rest of the world – compared to students from other parts of the Philippines."

To improve the disadvantageous position of these students in ARMM and CAAM, USAID-GEM established and implemented the CLIC Project throughout the conflict-affected areas of Mindanao, beginning in 2003 and ending in 2010. The Project had the following objectives:

1. To help assure that students in high schools in the ARMM and other CAAM developed the computer literacy that is often prerequisite to competing effectively for employment and/or admission to post-high school education or training opportunities; and
2. To demonstrate to communities in the ARMM and CAAM that the Philippine and U.S. Governments are concerned about the relative lack of economic opportunity available to young people in those areas of Mindanao.

Guided by these CLIC objectives, USAID-GEM provided partner schools in the ARMM and CAAM with up to 12 computers each, as well as high-speed Internet connections, computer peripherals, software and related teacher training. As of March 2010, CLIC had distributed computer-related resources to 921 schools. Ninety-one percent (91%) of these recipients were high schools and madrassahs, while 9% were elementary schools. USAID-GEM estimates that approximately 1.4 million students in these partner schools benefitted from CLIC, and that about 10,000 to 15,000 teachers had undergone CLIC training and used CLIC-provided resources in their instructional programs.

An integral component of CLIC was the participation of the Parent-Teacher Associations (PTAs) in each partner school, from initial implementation to the sustainability and maintenance of computers and laboratories beyond the lifespan of the GEM Program.

After eight years of project implementation, USAID-GEM commissioned the Institute for Small Farms and Industries (ISFI), wh was recently re-named the Institute for Socio-Economic Development Initiatives of Ateneo de Davao University, to conduct an impact assessment study to determine scientifically if CLIC objectives had been attained.

1.2 APPROACH AND METHODS

1.2.1 Sampling and Data Gathering Procedure

The study used quantitative and qualitative approaches to generate data for the study. It made use of surveys, focus group discussions (FGD) and key informant interviews (KII) to ensure validity of results. A survey relies on structured questionnaires as the data-capturing tool. In FGD, a moderator introduces topics of interest to a group of people with similar backgrounds or experiences in order to generate a range of opinions and ideas about these topics (Overseas Development Institute, 2009). KII is a one-on-one, semi-structured, in-depth interview with an individual considered by his/her group to be a knowledgeable person who could provide quality information on the topic of interest.

Using a purposive sampling technique, 225 out of the 921 CLIC partner high schools and 75 non-CLIC high schools were selected for the study. CLIC partner high schools were identified using inclusion-exclusion criteria, such as date when the school became a CLIC partner, geographic area, size of student population, location of school, security considerations, and whether or not the school received the standard CLIC package. Non-CLIC high schools were chosen on the basis of their location in conflict areas in Mindanao and their being recipients of computer literacy programs implemented by organizations other than USAID-GEM (i.e. local government units, or LGUs; the private sector; and government agencies such the Department of Trade and Industry, and Department of Science and Technology). The respondents of the study were drawn from the populations of students, teachers, school administrators, and community stakeholders from these schools, using the same purposive sampling technique.

The total sample of the study was 4800, disaggregated into 2250 student survey respondents, 2150 FGD participants, and 400 key informants. The student **survey instrument** was administered in 225 CLIC schools, to a group of 8 to 12 students per school. FGDs were conducted in all 225 CLIC partner schools, helping to ensure the robustness of the data, as this is the total number of schools in which the survey was administered.

The Key Informant Interviews (KIIs) were conducted in 225 CLIC and 75 non-CLIC high schools. Key informants included administrative officers, school principals or assistant principals, information technology coordinators or other personnel in charge of the school computer laboratory, computer teachers, guidance counselors, head teachers and PTA officers.

Secondary data was collected from the records of the Department of Education and in the schools included in the samples for the 225 CLIC high schools and 75 non-CLIC high schools. The collected secondary data were the Cohort Survival Rate (CSR), Completion Rate (CR), Participation Rate (PR), Dropout Rate (DR) and the National Secondary Achievement Test (NSAT) mean scores from 2004 to 2011. They are standard performance indicator measures of schools in the Philippines, and defined as follows:

a. **Cohort Survival Rate** refers to the proportion of school enrollees at the beginning grade or year level who reach the final grade or year level at the end of the required number of years of study.

b. **Completion Rate** refers to the percentage of first-year entrants in a level of education who complete the level in accordance with the required number of years of study.

c. **Participation Rate** refers to the ratio between the enrollments in the school-age range to the total population of that age range.

d. **Dropout Rate** refers to the proportion students who leave school during the year, as well as those who do not return to school the following school year, to the total number of pupils or students enrolled during the previous school year.

e. **National Secondary Achievement Test** is the national examination of fourth (4th) year high school students in all public and private secondary schools; it is aimed at determining their achievement level, strengths, and weaknesses in key subject areas. In this indicator the mean percentage score (MPS, or the ratio between the number of correctly answered items and the total number of test questions) was used.

1.2.2 Data Analysis

The survey data was subjected to exploratory analysis to check for the distribution of each outcome variable, missing values, potential outliers, and assumptions necessary for the statistical models to be used in the different testing procedures.

Descriptive statistics such as proportions, means and standard errors were estimated. A paired sample t-test was used to determine the impact of the project, to find any significant differences in the means of the observed data between CLIC and non-CLIC schools by region and levels of conflict in Mindanao. The test was also used to determine the effect of the project by comparing before (2004-2007) and after (2008-2011) conditions within the CLIC schools. The test was done using the 5% level of significance.

Both descriptive analysis and the two-way Analysis of Variance were utilized in treating data that pertain to students' perceived skills in computer applications. The descriptive analysis took care of identifying CLIC high school students' *skill level* in computer applications, while *skill differentiation* by region and by level of conflict was assessed through two-way Analysis of Variance. The same set of quantitative analysis tools was employed in analyzing the students' attitudes towards the use of computers and the Internet.

To establish the degree of attribution of students' attitudes toward computer use and the use of the Internet on the computer and Internet skills, or vise-versa, the correlation analysis was employed and was further carried over to causal-relationship analysis through regression analysis.

All inferential analysis test applied were done using the 95% confidence interval.

The qualitative data from the FGDs and KIIs was subjected to thematic analysis and used to reinforce and validate survey results.

1.3 FINDINGS

Based on primary data (survey, FGD, and KII results and secondary data from DepEd), the following are the key findings.

1.3.1 Computer and Internet Use in School

- Seventy percent (70%) of surveyed students accessed the Internet in school to conduct research for their school assignments, read online news, and view video and images.
- The most popular web-based email services used by students were Yahoo Mail (100%) and Google Mail (35%).
- For social networking, Facebook (100%) was the most popular followed by Yahoo Messenger (60%) and Friendster (30%).
- Among the Internet browsers, Mozilla Firefox (91%) was the most popular followed by Internet Explorer (75%), and Google Chrome (73%).
- YouTube was the most frequently accessed video sharing site (65%) by high school students.
- FGD results, supporting the survey findings, indicate that students were able to use Microsoft Office (80% of FGD participants) and perform basic computer operations (72% of FGD participants).
- Access to computer and Internet resources improved students' academic performance and quality of education, as they were able to produce better quality assignments (typewritten), and demonstrated improvements in their grammar and vocabulary, which ultimately contributed to higher grades.

1.3.2 Computer and Internet Use Outside School

- Students who were able to access Internet in schools also found ways of accessing it outside school. Although nearly 41% - 43% of them had access to computers at home, or through relatives or friends, all of them made use of Internet cafés during weekends (100%) and after school hours (52%).
- Most of these out-of-school Internet services were located outside the students' barangay of residence. They made use of outside Internet services for an average of one hour and thirty minutes a day, at an average cost of P26.01 a week.
- Students used computers and the Internet for social networking, sending email, instant messaging, finding student exchange programs and scholarship programs, as well as searching for relatives with whom they had lost contact.

1.3.3 Skills in Computer Applications

- Their regular use of CLIC-provided computers and Internet resources in school allowed the students to perceive that they now had an average skill level in the basic use of computers, but that they still needed to enhance their skills in more advanced computers applications, such as designing websites, burning files onto a CD, installing software programs, and scanning disks for viruses. When students were grouped by region and by level of conflict in their area, results showed that those from region 10 (subject to a moderate level of conflict), perceived

themselves to have a higher skill level in the basic uses of computer and the Internet than those from other regions.

- Students reported during FGDs that they were happy, grateful, and excited over their use of computers and the Internet, because it made research easier, and helped them to improve the quality of their assignments and projects.
- Parents noticed that their children used the computer and Internet to identify tertiary level schools and courses for their future studies, and to locate scholarship programs for which they could apply.
- Parents confirmed that their children had learned basic computer operations, how to conduct research over the Internet, and social networking

1.3.4 Attitudes Toward Use of Computer and Internet

- The CLIC assistance provided to surveyed high schools helped develop a positive attitude toward using computers and the Internet. Students expressed a desire to learn more about computers, and to use the Internet to connect to the world outside their community. It was an added impetus to complete high school and to pursue a college education, as they perceived that the information technology skills developed through CLIC would help them in their college coursework.
- Students had an average level of attitude toward use of computers and the Internet across regions and levels of conflict, a
- In FGDs, students reported a marked improvement in their school performance as a result of their computer literacy and Internet connectivity.
- Parents noticed a boost in self-confidence among children in CLIC partner schools, as well as enhanced resourcefulness and competitiveness, and ease in talking about computers.
- School administrators observed that students became increasingly reliant on computer resources as a source of up-to-date and accurate information.

1.3.5 Impact On Teachers

- Teachers in CLIC partner schools claimed that computers enhanced their teaching effectiveness and made related tasks easier.
- Teachers employed CLIC-provided computers, software and training in computing grades (Microsoft Excel), encoding lesson plans and test papers (Microsoft Word), and doing research online to prepare instructional materials.
- In some schools, teachers used CLIC computer resources in preparing and publishing school papers, enhancing basic education seminars, and developing physical education activities (e.g. researching dance steps and costume designs through YouTube).
- In some schools, teachers used CLIC to regularly engage in email communication with DepEd regional offices and to access DepEd's Facebook page

- Some teachers used CLIC resources to teach information technology classes and other integrated subjects such as English, Pilipino, Math, Science, TLE (technical livelihood education), where the use of computers was part of the teaching and learning methodology.

1.3.6 School Administrators' Perspective On the Utilization and Impact of CLIC Resources

- School administrators felt that CLIC resources made learning more interesting and easier for the students because they could research any subject of interest over the Internet or use a CD-based electronic encyclopedia.
- Given the amount of online information, students were excited to do their assignments.
- The Internet made students more aware of the events outside Philippines.
- Students were able to present their assignments more creatively using PowerPoint
- Teachers were able to update the content of their lessons more frequently with the help of the Internet and CLIC-provided software, and to make use of multimedia presentations in class..

1.3.7 Effect On Community Perception of GEM-USAID Support

Role of PTA

- 58% of the FGDs credited the PTA with the maintenance of the computers.
- 42% of the FGDs cited the PTA for providing financial assistance in the form of monthly payments for the Internet connection and electricity bills.
- In 24 schools, the PTAs succeeded in procuring additional computer units for the school Computer Laboratory.
- In 84 FGDs, many parents expressly stated that the PTA was willing to support the project.
- In 38 FGDs, the PTAs claimed that they were proud to be part of the project, and that the parents had showed themselves to be helpful and involved.
- In 12 FGDS, some PTAs claimed that, to some extent, the CLIC project was an achievement of the PTA due to their efforts to make the school a CLIC partner.
- Nearly half of the key informants (49%) said that the PTA's involvement in the acquisition of computers and establishment of Internet connection was limited to requesting that the school be included as one of the recipients of the CLIC project,and signing the Memorandum of Agreement.

Perceived Effect of CLIC Resources On Student Performance

- The computer resources had a positive influence on the quality of students produced by high schools because CLIC helped them to be more productive, creative, competitive, and inquisitive.
- Teachers observed that students become more attentive during class.

1.3.8 Perceived Contribution of CLIC Resources to Community

- CLIC improved the computer literacy of students and gave quality education.
- In 225 FGDs, GEM-USAID was acknowledged as the donor responsible for providing the CLIC computers and Internet connection.
- CLIC computer and Internet resources allowed students and teachers to cross the digital divide.
- The CLIC project contributed to the self-improvement, creativity, and self-confidence among teachers and students.

1.3.9 Perceived Effect on Peace and Security in the Community

- More than half of the key informants had a favorable view toward the Philippine and US Governments. They believed that the both Governments were concerned with improving community access to technology that would allow students to compete globally.
- Fifty-four key informants were happy with the economic impact of computer resources on the community.
- Key informants considered access to information as an important basis for promoting peace, because it has broadened the people's minds and it generated a positive outlook.

1.3.10 Secondary Data from DepEd

- School administrators rated the CLIC computers as having an average Internet connection speed when CLIC was initiated in their respective schools, and remaining the same until the survey period.
- CLIC schools, on average, had higher cohort survival rates than non-CLIC schools.
- The Completion Rate showed no significant differences between the CLIC and non-CLIC schools in any of the samples, except for Regions 10 and 13, where the completion rate was higher in the non-CLIC schools.
- There was no significant difference between Participation Rates in CLIC and non-CLIC schools, except in Northern Mindanao and high-conflict areas, where PR was higher in the non-CLIC schools.
- In Region 12 and ARMM, the dropout rate was higher in the CLIC schools than in the non-CLIC schools by 2.27% and 4.89% respectively. However, in the aggregate of all regions, there was no significant difference in dropout rates between CLIC and non-CLIC high schools.
- Students in schools with access to CLIC materials had a a significantly higher mean percentage score of 5.36% on their National Secondary Achievement Test than did students in schools without CLIC.

1.4 SUMMARY OF RESULTS

Results show that the computers and Internet access provided by the CLIC project were primarily utilized by students for their schoolwork requirements and to connect to the world through Facebook or Yahoo e-mail. These CLIC resources were employed by more female students than male students. This was true in Mindanao areas with a moderate level of conflict.

The familiarity with computers and Internet connections provided to students in CLIC schools probably prompted them to access the same outside the school campus during free time or after class hours, in nearby computer and Internet cafés. Their regular use of computers and the Internet made them perceive that they now had an average skill level in basic computer use, but that they still need to enhance their skills in more advanced applications, such as designing websites, writing files on CDs, installing software programs, and scanning disks for viruses. But when students were grouped by region and by level of conflict in their area, results showed that those from Region 10, under moderate level of conflict, perceived themselves to have a higher skill level in the basic use of computer and Internet than those from other regions. Similarly, students revealed to have a positive attitude toward the use of computers and the Internet, when grouped by region and by level of conflict, results show a slight variation. Such has prompted the analysis to identify a possible causal relationship between attitude and skills of students in the use of computers and the Internet, which revealed that only 2.89% of the total variation of students' skills can be explained by their attitude toward computer and Internet. Thus, much can be attributed to other factors. However, even with the low degree of relationship between skills and attitude, students' computer skill level can likely still be determined through their attitude toward computers and the Internet as such have been found to be statistically true in all cases.

1.5 CONCLUSIONS

In view of the findings of the surveys conducted among students from CLIC high schools and reinforced by KII and FGD results, it can be concluded that students:

- Used the computers and Internet provided by CLIC primarily for their schoolwork requirements and to connect to the world through Facebook or Yahoo e-mail. Their exposure to computer and Internet through CLIC prompted them to engage in additional computer and Internet use during class breaks or after class hours.
- Generally, students perceived themselves to have acquired an average level of skill and attitude toward computer and Internet use. However, there appears to be a low degree of relationship between students' attitude and acquired skills. Their computer skills can be attributed to other factors, such as location. Students' skills appeared to be significantly differentiated when grouped by location (by region and by level of conflict).
- GEM2 and GEM3 CLIC projects provided the same level of skill to their respective student-beneficiaries on computer and Internet use. Both project phases enabled the students to develop an average level of computer and Internet skill as well as a positive attitude toward the use of computers and the Internet.
- CLIC schools fared better overall than non-CLIC schools \on two school performance indicators: cohort survival rate and mean percentage score of students taking NSAT. For indicators such as completion rate, participation rate and drop-out rate, the differences between CLIC-recipient and non-CLIC schools were not statistically significant. It would appear that while computers and Internet connections in schools may contribute to the quality of school performance, the full weight of their contribution depends on the proportion of students with regular access to these resources.
- CLIC has enabled students to make better use of computers and the Internet in their academic and personal life. It has, in most barangays, demonstrated that the Philippine and U.S.

Governments are committing resources to improve young people's access to economic opportunities.

1.6 RECOMMENDATIONS

Sustain assistance provided by CLIC to students in accessing computer and Internet use Provide assistance to CLIC-recipient schools in helping school personnel develop students' advanced skills in computer and Internet use.

- Identify other possible factors highly contributory to students' skills in using computer and Internet.
- Establish a common portal that will contain lessons, lesson plans, and multimedia educational materials that can be accessed by teachers and students to enhance learning.
- Support development of culturally relevant learning materials.

CHAPTER 1 – INTRODUCTION

1.1. BRIEF HISTORY OF MINDANAO[1]

The Mindanao region encompasses about 35% of the entire land mass of the Philippines. Its population represents approximately 25% of the estimated 90 million people in the country.

The islandregion has long been plagued by insurrection and armed conflict, deeply rooted in its history. Before the coming of Arab missionaries, Mindanao was populated by indigenous peoples, who more or less coexisted peacefully with each other. Some of these indigenous peoples have survived into the present, such as as the B'laan, Higaonon, Mandaya, Manobo, Subanen, T'boli, and other indigenous ethnic groups. By the 14th century, the religion of Islam was introduced into the Philippines, with the Sulu archipelago as its entry point. By the time Spanish colonizers had reached the Philippines in the early 16th century, Islam had established a strong foothold in Mindanao, especially among the people of the Sulu archipelago and Zamboanga peninsula, and in central Mindanao, where the provinces of Lanao, Maguindanao, Sultan Kudarat, and Cotabato are today located. The Spaniards experienced particularly strong resistance in these areas in Mindanao in their attempts to convert the population to Christianity.

When the U.S. took the Philippines from Spain at the turn of the 20th century, it managed to partially integrate Mindanao and the Sulu archipelago. By and large, U.S. colonial policy toward Mindanao recognized and was respectful of the cultural differences existing among its peoples and the rest of the Philippines (which was largely Christianized). This success in incorporating Mindanao and the Sulu archipelago into the country brought with it, from the Muslim peoples' perspective, a negative consequence in that \ emigration to Mindanao from the Visayan Islands and Luzon became easier. At the turn of the 20th century, 90% of the people of Mindanao and the Sulu archipelago were Muslims; but by the turn of the 21st century, only about 18% were Muslims, due to successive waves of settlers from other parts of the Philippines.

This radical shift in the ethnic and religious composition of Mindanao resulted in a feeling of powerlessness among the original inhabitants. This was coupled with a perception that they were being treated as second class citizens in their own homeland. This sentiment fueled the desire, especially among a substantial part of the Muslim population, to separate from the Philippines in order to establish an independent Mindanao Republic. This has resulted in tensions that have periodically erupted into violent conflict and bloody armed struggle that have the overall effect of stunting, if not preventing, economic progress in large areas of Mindanao.

For almost four decades, Muslim separatist groups in the southern Philippine island of Mindanao have been battling the Armed Forces of the Philippines (AFP) with the goal of attaining independence, or at least substantial autonomy. In September 1996, however, after several years of negotiations, the Government of the Republic of the Philippines (GRP) and the Moro National Liberation Front (MNLF), the largest of the Muslim separatist groups, signed a Peace Agreement.

[1] This section is drawn mainly from the Growth with Equity in Mindanao Statement of Work for the "Evaluation of the Economic Impact of GEM Infrastructure Projects", March 2011.

There was a widespread hope that this Agreement would usher in a new era of peace in Mindanao, and that peace would make possible substantial and rapid economic progress in the Muslim areas of the island, which have long been among the poorest parts of the Philippines. This economic progress, it was hoped, would, in turn, institutionalize a durable peace by lessening the motivation of Mindanao's Muslim population to take up arms against the Government.

These hopes have been only partially realized. The MNLF's estimated 45,000 soldiers stood down with the signing of the Peace Agreement. For the most part, MNLF leaders have cooperated with efforts of the GRP and various donors in building a sustainable, peacetime economy in the Muslim areas of Mindanao. To a large extent, the armed clashes occurring between MNLF forces and the AFP since the signing of the Peace Agreement have been triggered by the "split" in the MNLF between elements loyal to its founder and long-time Chairman, Professor Nur Misuari, and a rival leadership within the MNLF which ousted Professor Misuari from this chairmanship.

However, the estimated 12,000 troops of the Moro Islamic Liberation Front (MILF), a group that splintered from the MNLF in the 1980s, were not party to the 1996 Peace Agreement and, while talks are being held with the MILF (and while a "cease-fire" agreement has been reached, and talks continue), a final Peace Agreement between that group and the GRP has yet to be attained. Armed clashes between MILF units and the AFP occasionally occur.

Also, more recently, the Abu Sayyaf Group (ASG), though small in number, has perpetrated some highly publicized kidnappings of both foreigners and Filipinos. Despite continuing pursuit and pressure from sizable AFP contingents sent to eliminate them, ASG continues to terrorize some areas of Mindanao and the Sulu archipelago. The disruption caused by the ASG has been so severe that small contingents of U.S. military forces have been providing assistance to the AFP in its efforts to hunt down the group.

The continuing unrest, armed clashes, kidnappings, and incidents of terrorism in Western and Central Mindanao and the Sulu archipelago severely limit the prospects for significant economic progress in those areas. While Southern and Eastern Mindanao have largely been spared from the violence, it has become common in parts of Western and Central Mindanao, and the Sulu archipelago. Their proximity to the areas of violence has meant that few businesses are investing in new businesses or expanding existing businesses in those parts of the islands.

Essentially, Mindanao is caught in a vicious cycle. Violence and fears of violence are hindering economic growth, and the emergence of economic opportunity. The absence of economic opportunity, in turn, helps maintain a situation where many individuals are ready to turn to violence and rebellion with the hope that, through these routes, they will be able to improve their own economic prospects.

To address the situation in Mindanao effectively, the GRP has been pursuing a two-pronged approach. Using military and other security resources, it is trying to contain and eliminate the violence. To try to assure that widespread violence does not re-surface in the future, it is attempting to expand economic opportunities for all the people in Mindanao.

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1.2. DESCRIPTION OF CLIC AND PERIOD DURING WHICH IT OPERATED[2]

The Growth with Equity in Mindanao Phase 3 (GEM 3) is the largest and most diverse program by the United States Agency for International Development (USAID) in the Philippines. It operates throughout Mindanao, placing its priority on the Autonomous Region in Muslim Mindanao (ARMM) and other conflict-affected areas in Mindanao (CAAM). GEM works to achieve two related objectives:

1. To accelerate economic growth in Mindanao and help assure that as many people as possible benefit from the economic growth, and that the benefits are equitably distributed
2. To help bring about and consolidate peace in Mindanao.

To attain these objectives, the GEM Program through its three phases (GEM 1,2,3) had the following components:

1. Infrastructure Development
2. Workforce Preparation
3. Business Growth
4. Governance Improvement
5. Former Combatant Reintegration

The**Computer Literacy and Internet Connection (CLIC)** is one of the four projects under the **Workforce Preparation** component. Through CLIC, USAID-GEM provided partner schools in ARMM and CAAM with up to 12 computers each, as well as high-speed Internet connections, computer peripherals, software and related teacher training. As of March 2010, CLIC had provided computer-related resources to 921 schools.

To qualify as a CLIC partner, interested schools had to have a stable electricity supply. The school's Parent-Teacher Association (PTA) had to be willing to sustain the project by paying the Internet subscription after the expiration of the first 12 months of CLIC-paid subscription. After they qualified as partners, CLIC schools were expected to assign two teachers to supervise the Computer Laboratory Room and to allow these teachers to attend training on computer and Internet use. In addition, the schools were expected to assign two non-teaching staff persons to be trained in computer operation, repair and maintenance. The school and the PTA were tasked to prepare a sustainability plan, detailing how the Internet subscription would be assumed after the CLIC-paid subscription expired, and how the community could access these computer resources for a fee after school hours and weekends.

1.3. BACKGROUND AND RATIONALE

Before the CLIC project was conceptualized and implemented, most students in the Autonomous Region in Muslim Mindanao (ARMM) and other conflict-affected areas of Mindanao (CAAM) had no ready access to the Internet. GEM has claimed that computers and the Internet simply did not exist in the ARMM or other CAAM - either in schools or Internet cafes. GEM believed that this placed students

[2] CLIC Project description is lifted from GEM's website (www.mindanao.org) and the Statement of Work: CLIC Impact Study.

in ARMM and CAAM at a "disadvantage academically, in the job market, and in their understanding of and connection to the rest of the world, compared to students from other parts of the Philippines."

To improve the disadvantageous position of the students from ARMM and CAAM, USAID-GEM established and implemented the CLIC Project throughout conflict-affected areas of Mindanao, beginning in 2003. Ninety-one percent (91%) of the recipients are high schools and madrassas, while 9% are elementary schools. GEM claims that around 1.4 million students have been exposed to CLIC-equipped schools and that 10,000 to 15,000 teachers in participating schools have gone through CLIC training and have used CLIC-provided resources in their instructional program.

After eight years of project implementation and with enormous amount of resources invested in the project, the time has come to find out if the project has made a positive impact on students, institutions, and communities in conflict-affected areas of Mindanao.

1.4. OBJECTIVES OF THE IMPACT STUDY

The impact assessment study was carried out to determine if USAID-GEM had accomplished the stated objectives of the CLIC project, namely:

- To help assure that students in high schools in the ARMM and other CAAM developed the computer literacy that is often a prerequisite in competing effectively for employment and/or admission to post-high school education or training opportunities; and
- To demonstrate to communities in the ARMM and other CAAM that the Philippine and U.S. Governments were concerned about the relative lack of economic opportunity available to young people in those areas and were prepared to commit resources that could help assure that greater opportunities were available to them.

To determine if the above twin objectives had been accomplished, the impact assessment team examined the following indicators:

- At least 70% of students who had availed at least two years of CLIC provided resources would have established personal email accounts as well as accounts on social networking sites such as Facebook.
- School drop-out rates with respect to CLIC participating high schools would be at least 15% less than drop-out rates experienced by high schools not offering computer and Internet instruction.
- The percentage of students graduating from CLIC partner high schools who attend higher education institutions would be at least 30% higher than the percentage in the case of students graduating from high schools which did not offer computer and Internet education.
- Students who had availed of CLIC resources for at least one year would attain scores on the standardized student tests administered by the Department of Education (national or ARMM) that are at least 15% higher than scores attained by students not having the benefit of CLIC resources and instruction.

- Communities in which CLIC partner high schools are located would have a generally more favorable attitude toward the Philippines Government and the U.S. Government than communities which do not have CLIC partner high schools

CHAPTER 2 - CLIC PROJECT SCOPE

2.1. AREA OF COVERAGE

Coverage can be looked at in two dimensions: time and space. In terms of time, Table 1 shows the distribution of CLIC-partner schools by year and region starting in 2003 and up to 2010. In terms of space, Figure 1 shows a GIS-based distribution of CLIC-partner schools all throughout Mindanao.

Table 1: Distribution of CLIC-partner schools, by Year and by Region

	2003	2004	2005	2006	2007	2008	2009	2010	Total
Region 9	1	13	15	37	86	13	57	13	235
Region 10	0	19	10	16	14	0	5	0	64
Region 11	0	0	2	0	2	2	11	6	23
Region 12	0	9	67	88	83	16	71	5	339
Region 13	0	0	3	2	31	0	0	0	36
ARMM	4	37	22	39	70	12	38	2	224
Total	**5**	**78**	**119**	**182**	**286**	**43**	**182**	**26**	**921**

CLIC started in 2003, covering only Region 9 with one school and ARMM with four schools. By 2004, the project had expanded to two more regions, Region 10 and Region 12. That year, the total number of schools that benefited from the program reached 78. In 2005, the CLIC Project was being implemented in all Mindanao regions, with the addition of three schools in Caraga Region and two schools in Region 11. The year 2006 saw an increase of 56% over 2005 in terms of total CLIC-partner schools, with Region 12 registering the most number of CLIC-partner schools while no new schools were added in Region 11.

The peak of CLIC project implementation was in 2007, when a total of 286 schools received computer resources from GEM-USAID, with Region 9 and Region 12 having the most number of partner-schools at 86 and 83 respectively. After a year, distribution of computer resources dropped by 85% (253 fewer schools than the previous year).

The year 2009, on the other hand, saw a sharp increase (323%) from the previous year in terms of the number of schools participating in the CLIC program, reaching 182 (139 more schools). The project ended its run in 2010, extending computer resources to 26 schools, the majority of which were in Region 9.

In its eight-year duration, CLIC distributed computer resources and provided Internet access to 921 schools all over Mindanao. According to GEM, this number represents almost all of the public high schools in CAAM, or 62% of the total public secondary schools (1,491) throughout Mindanao.

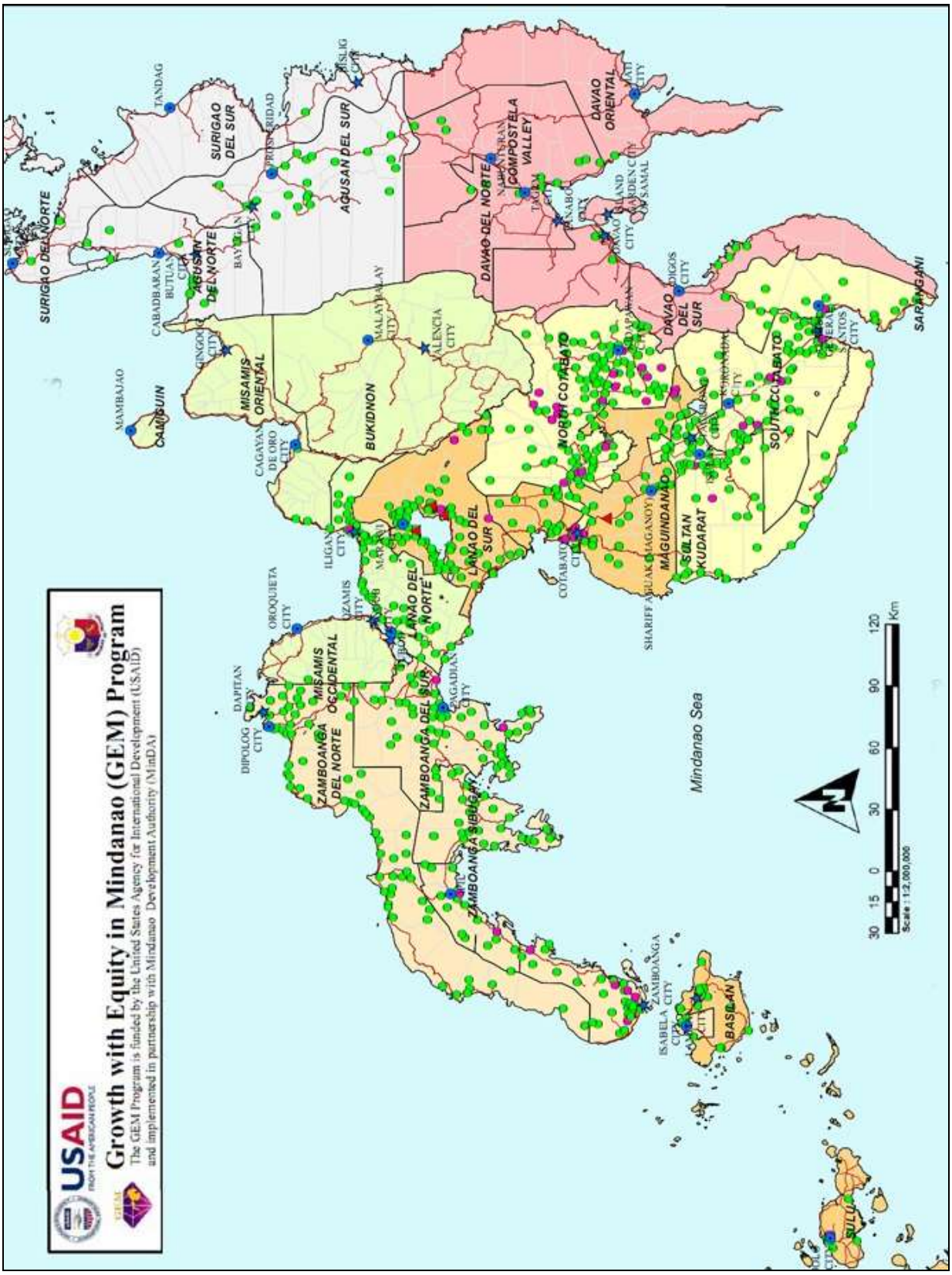

Figure 1: Mindanao map showing CLIC-partner schools

Figure 2 compares CLIC-partner schools to the total secondary schools in Mindanao during the School Year 2009-2010, the terminal year of CLIC Project implementation. It shows that Region 12 benefitted the most, with 93% of its schools receiving CLIC assistance. This is followed by ARMM (83%) and Region 9 (67%). That these three regions received more CLIC assistance is consistent with the GEM-3 goal of focusing on areas with a high concentration of Muslim residents.

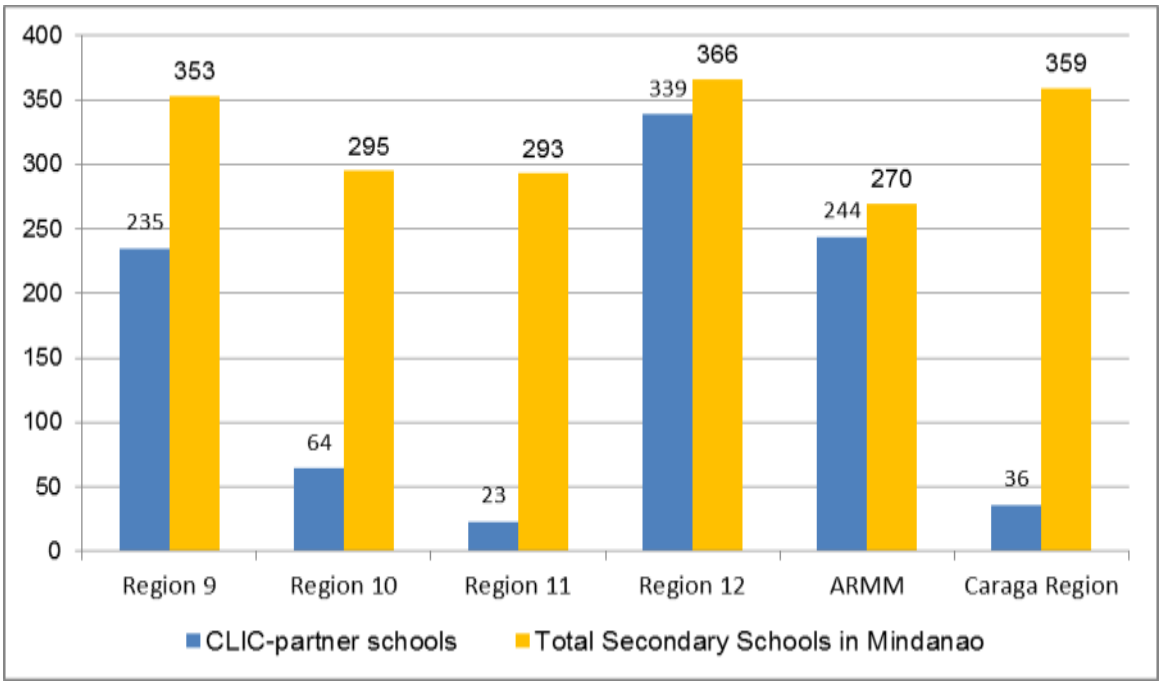

Figure 2: Comparison of CLIC-partner schools to Total Secondary Schools (SY 2009-2010), by Region

2.2. TYPE OF RESPONDENTS

Table 2 shows the different types of respondents that participated in this study. Their total is 4,800, coming from 225 CLIC-partner schools and 75 non-CLIC schools. Figure 3 shows graphically the distribution of these respondents, which are comprised of (1) high school students, (2) school administrators, (3) computer laboratory personnel and teachers, and (4) PTA officials

Table 2: Types of Respondents

Types of Respondents	Survey	FGD	KII	Total
Students	2,250	907	56	3,213
School Administrators		204	91	295
Computer Laboratory Personnel		740	154	894
Parents		299	99	398
Total	2,250	2,150	400	4,800

- **Students:** There were 3,213 high school students who participated in the CLIC Impact Study. Seventy percent of them (2,250) filled out the Student Survey Questionnaire, which was administered to them as a group. The average number of students per group was 10. Twenty-nine percent (907) of the students were participants of the Focus Group Discussions (FGDs). The rest of the students (56 or 2%) served as key informants. The selection of the students was made by the Principal or the IT Coordinators/Computer Laboratory In-charge.

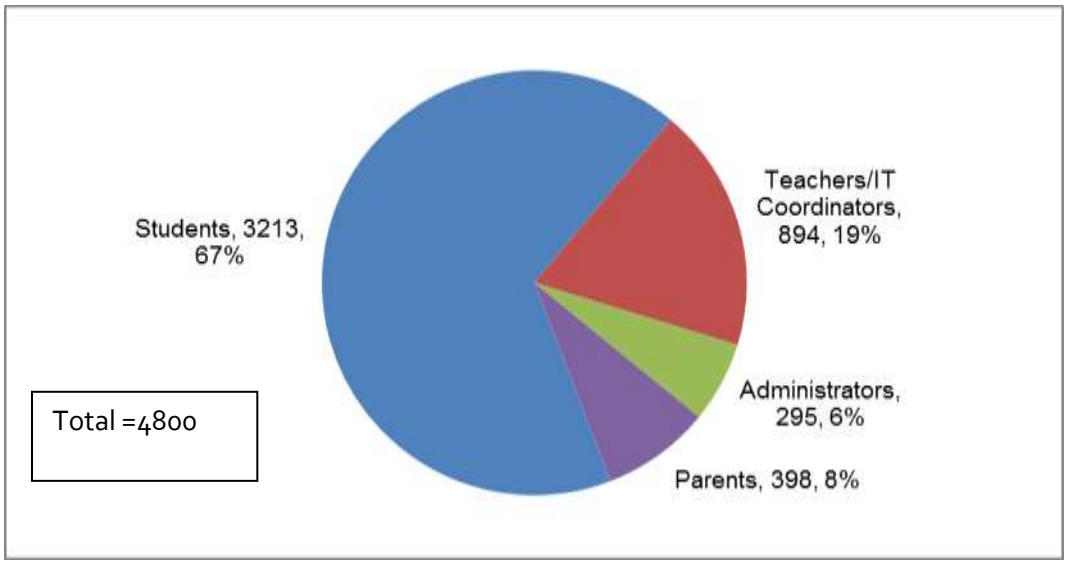

Figure 3: Respondents of the Study

- **School Administrators:** To gain a better understanding of how the CLIC project was managed, the impact study team solicited ideas from the school administrators. The respondents from the pool of school administrators were295 high school principals and their alternates, who included Assistant Principals, Officers In-charge, Guidance Counselors, Administrative Officers, Human Resources Officers, Planning Officers, and Prefects of Discipline. The majority (69%) served as key informants while others (31%) participated in the FGDs.
- **Computer Laboratory Personnel:** The third category of respondents was 894 individuals directly involved in maintenance and use of computer resources. Eighty three percent (83%) of these respondents participated in the FGD sessions, while 17% served as key informants. This category of respondents included Laboratory In-charge Persons or IT Coordinators and teachers who used the computer and Internet.
- **PTA Presidents and other PTA officials:** The fourth category of respondents was parents represented by PTA Presidents and other officials. Seventy-five percent of 398 respondents participated in the FGDs, while 25% served as key informants.

Disaggregated by gender, there were more females in the student survey (58%), FGDs (62%), and key informant interviews (53%) than males.

CHAPTER 3 – METHODOLOGY

3.1. BRIEF NARRATIVE DESCRIPTION OF THE STUDY

This study is an impact assessment of the CLIC project. The primary purpose of the study is to determine if the CLIC Project has contributed to the computer literacy of high school students in ARMM and CAAM and if CLIC, in any way, contributed to communities' favorable attitude toward the Philippine and US governments.

The study focuses on four impact areas:

1. **Impact on students** as indicated by their attendance in school, computer literacy, career aspirations, achievement scores, information skills, and communication skills
2. **Impact on teachers'** technical skills
3. **Impact on schools'** graduation rate, cohort survival, school performance on standardized tests, and attendance at tertiary schools
4. **Impact on the communities'** attitude toward GRP and USG

The study draws its data from primary and secondary sources. The primary data was generated from the respondents by using a survey instrument, Focus Group Discussions, Key Informant Interviews. The secondary data were collected from the archival records of the DepEd.

To determine the impact, comparison is made between CLIC and non-CLIC high schools, and earlier (2003-2007) and recent (2008-2010) exposure among students to the CLIC project.

3.2. APPROACHES TO SCHOOL SELECTION

3.2.1. Sampling Technique

The sample sizes of 225 CLIC schools and 75 non-CLIC schools were predetermined by USAID-GEM that commissioned the study. The study team used purposive sampling technique to identify high schools to be included in the study based on some inclusion-exclusion criteria. Some of these criteria are: dates when schools became CLIC partners, geographic area, size of student population, location of schools, security considerations and that the school must have received the standard CLIC package. The standard CLIC package refers to the provision of 12 sets of computer units, a printer, high speed Internet connection, Microsoft Windows operating system and office application software, and other necessary peripherals. Based on the above criteria, the number of schools per region cluster is shown in Table 3.

Table 3: Distribution of Sampled Schools per Cluster of Regions

Clustered Regions	Number of CLIC Partner Schools		Number of Non-Clic Schools
Central Mindanao:	68 (30.22% of 225)	vs	15 (20.00% of 75)
Northern Mindanao:	66 (29.33% of 225)	vs	25 (33.33% of 75)

Southern Mindanao:	19 (8.44% of 225)	vs	7 (9.33% of 75)
Western Mindanao:	72 (32.00% of 225)	vs	28 (37.33% of 75)

The sample respondents were drawn from the population of students, school administrators, teachers/laboratory technicians, and parents of students within the identified high schools. The respondents were chosen using the same purposive sampling technique. Table 4 shows the distribution of the study's respondents.

Table 4: Distribution of Respondents

Data Gathering Technique	Respondents	Mindanao Area	Number Per School		Total	
			CLIC	Non-CLIC	CLIC	Non-CLIC
Survey/Interview	Students	Central	10	10	680	150
		Northern	10	10	660	250
		Southern	10	10	190	70
		Western	10	10	720	280
FGD	Teacher	Central	3	3	204	45
		Northern	3	3	198	75
		Southern	3	3	57	21
		Western	3	3	216	84
	Students	Central	3	3	204	45
		Northern	3	3	198	75
		Southern	3	3	57	21
		Western	3	3	216	84
	PTA	Central	4	4	272	60
		Northern	4	4	264	100
		Southern	4	4	76	28
		Western	4	4	288	112
KII	Principal/Administrator	Central	1	1	68	15
		Northern	1	1	66	25
		Southern	1	1	19	7
		Western	1	1	72	28
	Computer Lab. Personnel	Central	1	1	68	15
		Northern	1	1	66	25
		Southern	1	1	19	7
		Western	1	1	72	28
	PTA President	Central	1	1	68	15
		Northern	1	1	66	25
		Southern	1	1	19	7
		Western	1	1	72	28
	Student Council President	Central	1	1	68	15
		Northern	1	1	66	25
		Southern	1	1	19	7
		Western	1	1	72	28

3.3. DATA GATHERING PROCEDURES AND TECHNIQUES

3.3.1. Collection of Primary Data

The primary data was collected using survey, FGD, and KII tools. The ISFI Assessment Team developed the data-capturing tools in consultation with USAID-GEM. After pre-testing and getting approval from USAID-GEM of the final version, the tools were mass-produced for field use. Nine teams of fieldworkers were deployed simultaneously to collect the needed data in various locations in Mindanao, with each team consisting of three members.

- The student **survey instrument** was administered in 225 CLIC schools to a group of eight to 12 students per school. The in-charge of the school Computer Laboratory, sometimes referred to as the IT Coordinator, was responsible for selecting the students. The selected students were assembled in a classroom or Computer Laboratory room and each student was given a questionnaire to complete. The students would begin answering the survey questionnaire only after one of the enumerators had finished explaining the purpose of the study and given instruction on how to complete the questionnaire. The total number of questionnaires filled out was 2,250.

Figure 4. Students of Pangyan NHS fill-out the questionnaire based on their CLIC experience.

Figure 5: Students of Our Lady in Peace in show their completed questionnaire.

- While students were completing the questionnaires, two other team members conducted the **FGD** in other areas within the school at a distance from the students, to avoid distraction. One team member was responsible for asking the questions and a second team member was responsible for taking notes and documenting the responses. The FGDs were usually attended by 6 to 15 people, but more often an average of nine, consisting of students, teachers, school principals, and parents. The total number of FGD participants from 225 CLIC schools was 2,150.

- After the team members finished the survey and FGD, they conducted the **KIIs** within school premises, usually at the office of the respondent. They interviewed one to three persons per school, depending on availability of the key informants. The positions of the key informants

were Administrative Officers, Principals or Assistant Principals, IT Coordinators or Computer Laboratory In-charge Persons, Computer Teachers, Guidance Counselors and Head Teachers. The Parent-Teacher Associations were commonly represented by the Presidents. However, there were occasions in which the PTAs were represented by Treasurers, Secretaries and other members of the association. Overall, the total number of key informants from both CLIC and non-CLIC schools was 400.

Figure 6. Parents, teachers and students share their views in Alabel NHS FGD.

Figure 7. Parents and teachers in Madamba NHS FGD.

3.3.2. Collection of Secondary Data

The Assessment Team collected secondary data from both CLIC and non-CLIC high schools that was identified in the sample. The collected data were Cohort Survival Rate (CSR), Completion Rate (CR), Participation Rate (PR), Dropout Rate (DR) and National Secondary Achievement Test (NSAT) Mean Scores from 2004 to 2011.

3.4. DATA ENTRY AND DATA AUDIT

The Data Management Team (DMT) prepared a relational database using Microsoft Access. The data entry forms looked exactly the same as the paper-based survey questionnaire, FGD guide and KII guide. The data entry forms contained conditional skip patterns and data validation codes embedded during their creation to ensure that each data field only accepts the appropriate data, thereby minimizing human error during data entry and increasing data quality and integrity. With ODBC (Open Database Connectivity) driver included in most personal computers, SPSS, a statistical package popular among social scientists, could directly read the database for analysis and generation of summary tables.

Dummy tables were prepared for each survey instrument to facilitate the processing and analysis of data. They were also prepared to come up with a systematic classification of the responses generated using qualitative methods such as the Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs). The tables aimed to illustrate the distribution and degree of variation of the responses on a given set of indicators specified in the survey instruments and on the issues and concerns raised during the FGDs and KIIs. Most importantly, they aimed to provide preliminary information on the effects of USAID-GEM's CLIC project. The tables were accomplished using the query facility of Microsoft Access.

Data cleaning and data auditing were periodically conducted to ensure that the data encoded were consistent with the responses in the survey instruments, FGDs and KIIs. The selection of the entries to be audited was conducted through random sampling to fast track the process without sacrificing its reliability. A separate team was tasked to conduct data auditing to ensure that results were not influenced by biases.

3.5. DATA ANALYSIS TOOLS

3.5.1. Analysis of Quantitative Data

A paired sample t-test was used to determine the impact of the project, to find whether there are significant differences in the means of the observed data between CLIC and non-CLIC schools by regions and levels of conflict in Mindanao. The test was also used to determine the effect of the project by comparing before (2004-2007) and after (2008-2011) scenario within the CLIC schools. The test was done using the 5% level of significance.

A survey was conducted among the students of CLIC-high school recipients in order to gather feedback on the following:

- Basic use of computers and Internet in school and outside school;
- Perceived skills on computer applications; and
- Attitude toward use of computers and Internet.

Data retrieved was generally analyzed by using the framework of students' distribution by region and by level of conflict in the area. Specifically, exploratory or descriptive analysis by the use of percentages, mean and standard deviations, was applied in determining students' basic use of computers and Internet in school and outside school.

Moreover, both descriptive analysis and the two-way Analysis of Variance were utilized in treating data pertaining to students' perceived skills on computer applications. The descriptive analysis took care to identify CLIC high school students' *skill level* on computer applications while *skill differentiation* by region and by level of conflict was addressed through two-way Analysis of Variance. The same set of quantitative analysis tools were employed in analyzing students' level of attitude on the use of computers and Internet.

To establish the degree of attribution of students' attitudes toward computer and Internet on the computer and Internet skills, or vise-versa, the correlation analysis was employed and was further carried over to causal-relationship analysis through regression analysis.

All inferential analysis test applied were done using the ninety-five percent (95%) confidence interval.

3.5.2. Analysis of Qualitative Data

Following data entry of verbatim transcripts, codes were applied to specific response passages. Each code represents a common theme. After coding the transcripts, thematic analysis was carried out. Similar text passages coming from different sources (from the responses of different FGD participants and key informants) were extracted, sorted, and put together under one common theme. Further, the results of database searches were exported into other formats for further analysis with other qualitative or statistical analysis software programs.

Information from the focus group discussions was used to support the quantitative analysis from the survey. The qualitative data generated from school and community officials provided additional insights to those gathered from the students included in the survey.

CHAPTER 4 – FINDINGS AND ANALYSES

4.1 IMPACT ON STUDENTS

4.1.1. Computer and Internet Utilization in School

Survey Results

As revealed in **Error! Reference source not found.**, only about seventy percent (70%) of the surveyed students accessed the Internet in their schools. Students who most frequently accessed the Internet in schools were located in Region 9, 12, and ARMM, the regions into which USAID-GEM poured a lot of CLIC resources. The top three reasons they cited, as shown in **Error! Reference source not found.**, for accessing the Internet in school were for conducting research for their school assignments (100%), reading online news or information (80%), and viewing video and images (80%). Interestingly, there were a few students (5%) who used the Internet to buy goods or services online.

Table 5: Distribution of Student-respondents Accessing Internet in School

Region	Level of Conflict							
	Moderate				High			
	Female		Male		Female		Male	
	Freq	%	Freq	%	Freq	%	Freq	%
9	282	33.14	155	22.86	14	77.78	6	66.67
10	84	9.87	55	8.11	0	0.00	0	0.00
11	33	3.88	18	2.65	0	0.00	0	0.00
12	261	30.67	325	47.94	0	0.00	0	0.00
13	47	5.52	25	3.69	0	0.00	0	0.00
ARMM	144	16.92	100	14.75	4	22.22	3	33.33
TOTAL	851	100.00	678	100.00	18	100.00	9	100.00

Table 6: Percentage Distribution of Students' Purpose in Accessing Internet in School

Purpose for Accessing Internet	%	Purpose for Accessing Internet	%
To send and receive e-mail	54.34	To read online news/information	79.51
To chat with friends and relatives	57.10	To view video and images	79.51
To participate in social networking groups	41.04	To listen to music	64.35
To do research for school assignments	100.00	To play online games	35.45
To search for courses to study in college	48.55	To upload images, video, music	46.69

To search for scholarship programs	41.49	To buy goods/services/items	5.07
To download eBooks	10.66		

Table 7 shows that students who accessed the Internet in school often used the web-based email services of Yahoo (100%) while only nearly 35% of them used Google Mail. That Yahoo Mail is popular could be due to the fact that it has been around much longer that Google Mail. Only an insignificant number of students took advantage of web-based email services of Window's Live Hotmail (1.80%), AIM/AOL (0.51%) and GMX mail (0.39%).

For social networking, Facebook (100%) wass the most frequently used by students, followed by Yahoo Messenger (59.92%) and Friendster (30%). Yahoo Messenger (launched in 1998) and Friendster (launched in 2002) used to be very popular among Filipino users. However, their popularity lessenedfollowing the launch of Facebook in 2004. The frequent mention of Facebook on national television could be a contributory factor in its popularity among the youth.

The tool to access the content of websites is an Internet browser. Survey results indicate that Firefox, owned by the Mozilla Foundation, is the most popular (91.27%) among students. It is followed by Internet Explorer (74.57%), a browser owned by Microsoft Windows, and Google Chrome (72.64%), a browser owned by Google, Inc. Interestingly, this finding is consistent with the findings of www.w3schools.com, a global browser statistics monitoring site. It is important to note that the popularity of an Internet browser among average users is to a large extent influenced by what is pre-installed in the computer by the computer technician.

YouTube is the most frequently (65%) accessed video sharing site by high school students. It has to be noted that YouTube can be used without creating an account, especially if the sole purpose is to view video clips. An account is only needed if one wants to upload a video.

Table 7: Percentage Distribution of Students' Accessed Sites, Browsers, and Networks

Web-based Email		**Social Networking**		**Internet Browser**		**Video Sharing Sites**	
Yahoo Mail	100.00	Facebook	100.00	Internet Explorer	74.57	You Tube	64.80
Google Mail	35.20	Friendster	30.96	Firefox	91.27	OneWorld TV	1.54
AIM/AOL	0.51	Yahoo Messenger	59.92	Opera	5.84	Fotki	0.19
Window's Live Hotmail	1.80	MySpace	4.43	Google Chrome	72.64	GamerDNA	1.48
GMX Mail	0.39	Haboo	0.51	Safari	1.41	PlayFire	1.09

FGD Results

FGD results support the survey findings on computer and Internet use in school. The FGDs named several tasks and activities that the students were able to perform in school with the use of CLIC computers and Internet connection.

In terms of new knowledge and skills acquired from working with their computer and Internet resources, students were able to use **Microsoft Office** (80% of FGDs) for their school work, particularly Microsoft Word, Excel and PowerPoint. They were also able to perform **Basic Computer Operations** (72% of FGDs) such as switching the unit on and off, cutting and pasting text, creating and renaming files, saving a file to a flash drive, which they all called a "USB".

The students attributed several improvements in their academic performance and quality of education to their access to computer and Internet resources in school. Now that they were able to "computerize" their assignments and reports and make PowerPoint presentations (a step up from writing and drawing on manila paper, as expressed in the Caraga Region), the students felt that they were producing **Better Quality School Work** (40.4% of FGDs). Some other noteworthy enhancements expressed in the FGDs are **Higher Grades** and **Improved Grammar and Vocabulary**.

There were also some unique computer applications. In the Claret College of Isabela, Basilan, in Region IX, the students made special mention of how the votes for the election of their student government officers and votes of judges for the school beauty pageant were tabulated much faster with computers. In Diplahan National High School of Zamboanga Sibugay in the same region, students have used the computer and Internet to access dance steps on YouTube for a school performance.

4.1.2. Computer and Internet Utilization Outside School

Survey Results

Table 9 and Table 10 reveal that students who accessed Internet in schools also found ways of accessing it outside of school. Although nearly 41% - 43% of them have access to computers at home, or through relatives or friends, all of them made use of the Internet café (100%) during weekends (100%) and less frequently after school hours (52%) because they considered it more fun to use these facilities in the company of friends. Most of the out of school Internet services were located in their respective barangay, or village. Students made use of outside Internet services for an average of one hour and thirty minutes a day, at an average cost of P26.01 per week.

Table 8: Distribution of Student-respondents Accessing Internet Outside School

Region	Level of Conflict							
	Moderate				High			
	Female		Male		Female		Male	
	Freq	%	Freq	%	Freq	%	Freq	%
9	282	33.14	155	22.86	14	77.78	6	66.67
10	84	9.87	55	8.11	0	0.00	0	0.00
11	33	3.88	18	2.65	0	0.00	0	0.00

12	261	30.67	325	47.94	0	0.00	0	0.00
13	47	5.52	25	3.69	0	0.00	0	0.00
ARMM	144	16.92	100	14.75	4	22.22	3	33.33
TOTAL	851	100.00	678	100.00	18	100.00	9	100.00

Table 9: Percentage Distribution of Students' Internet Access Outside School

Access Place		Access Time		Location	
Home	40.78	Before school time	8.41	Near school	23.83
Relative or Friend's computer	42.51	In-between school time	5.14	Far from school but within barangay	19.08
Internet cafe	100.00	After school time	51.51	Near home	30.76
		Weekends	100.00	Far from home but within barangay	15.48
				Outside barangay	43.03

FGD Results

FGD results supported the survey results. Outside of their school work, the students also used the computer and Internet for other purposes. Social networking (e.g., Facebook, Friendster), e-mail, and instant messaging (e.g., YM chatting) were the most common activities. Some students have used the Internet creatively for their future prospects, e.g. locating student exchange programs or scholarship grants in Region IX, or searching for on-line employment in Region X. Some students used their computer knowledge to become entrepreneurs. In Minsulao National High School in Zamboanga Sibugay of Region IX, a student offered computer services for a fee, while another student in T'boli National High School in South Cotabato in Region XII set up a modest Internet café. The more poignant responses came from students who had been geographically separated from their parents and other family members. With the use of the computer and Internet, two students (one from Zamboanga City High School, another from Zamboanga Sibugay National High School, both in Region IX) whose parents are separated, embarked on a search for their mothers, and eventually found them. Another student from San Luis National High School in Agusan del Sur in the Caraga Region found out the "real situation" of the father. In Region XII, some students designed and printed customized greeting cards for their parents.

4.1.3. Skills on Computer Applications

Survey Results

It can be observed in Table 10 that students perceived that they had the necessary skills for the basic use of computer. They perceived that they still lacked skills on the advanced use of a computer, specifically for designing websites, writing files onto a CD, and installing software programs, as well as scanning disks for viruses. They also believed that they still had to improve their skills in finding and launching specific software programs as well as navigating between programs.

Their skills in the use of the computers were believed to have been developed through their computer resources in schools with the help of their school teachers, starting in their first year.

Generally, Table 11 and Table 12 reveal that students perceived that they had just an average level of skill on the use of computer, which can be attributed to the inputs of their teachers (85.80%) in classes in 1st year through 4th year in aid of their learning.

However, Table 12 and Table 13 show that among those students surveyed who revealed their perceived skills in the use of computer applications, those from Region 10, an area with a moderate level of conflict, perceived themselves to have a higher level of computer skills than others across all regions. This differentiated level of perceived skills in use of computer applications is said to be significantly attributed to by the interaction of the location of students by region relative to the level of conflict in their area.

Table 10: Descriptive Summary of Students' Skills on Computer

Basic Skill (3.99)	$\overline{X}$	**sd**
Switching computer on and off	4.32	1.47
Using computer mouse/touchpad	4.34	1.44
Deleting and renaming files	4.08	1.52
Creating files and saving them	4.12	1.53
Using printer	3.07	1.67
Intermediate Skill (3.37)		
Finding and launching specific software programs and navigating between programs	2.89	1.59
Transferring files from hard drive to USB drive	3.14	1.76
Using basic functions of Microsoft Word	3.87	1.60
Browsing the Internet for information	3.58	1.72
Advance Skill (2.51)		
Scanning disks for viruses	2.21	1.60
Installing software programs	2.18	1.49
Writing files onto a cd	2.09	1.47
Using Microsoft Excel application	3.08	1.67
Using Microsoft PowerPoint application	3.18	1.71

Uploading and downloading music, images and videos	2.99	1.72
Designing a website	1.85	1.33

Legend: 1.00 – 2.32 = poor level of skill; 2.33 – 3.65 = average level of skill; 3.66 – 4.98≈5 = high level of skill

Table 11: Percentage Distribution of Students By Computer Skill First Acquisition

First Acquisition of Computer Skill		Attended Computer Class Year	
School teacher using school's computer	85.80	First Year	58.51
Attending computer classes outside school	12.55	Second Year	50.60
Self taught through computer at home	25.86	Third Year	53.06
Self taught through Internet cafe	38.63	Fourth Year	40.15

Table 12: Comparison of Students' Perceived Level of Computer Skills by Region by Conflict Area

$\overline{X}$			Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Region	Level of Conflict							
	Moderate	High	Corrected Model	17.01	5	3.40	3.49	0.004
9	3.48		Intercept	818.40	1	818.40	838.37	0.000
10	3.67		Level of Conflict	1.96	1	1.96	2.00	0.157
11			Region	16.95	4	4.24	4.34	0.002
12	3.59		Error	743.85	762	0.98		
13	3.21	3.56	Total	10172.43	768			
ARMM		3.56	Corrected Total	760.86	767			

Legend: 1.00 – 2.32 = poor level of skill; 2.33 – 3.65 = average level of skill; 3.66 – 4.98≈5 = high level of skill

FGD Results

"Happy and thankful" (149 FGDs) and "excited" (94 FGDs) are the widely-held sentiments expressed by students about their use of computers and Internet connections in schools. Ease in doing school work, access to information, improved quality of assignments and projects are some of the reasons given for feeling this way. One of the most candid responses given was that they no longer had to spend personal money for computer and Internet use in an Internet café. Several described "eureka" moments in which

they realized how these resources had made research work much easier (20 FGDs) and how powerful a tool the computer is for finding and using information resources (6 FGDs). Overall, positive student feedback on having computers and Internet connectivity (eager, privileged, enjoyment) far outweighed the negative (nervousness, hesitation). In the Zamboanga State College of Marine Science and Technology in Region IX, the students expressed that computers are no longer a "want" but a "need".

Some students also expressed a better level of preparedness for college. In Zamboanga City High School (Main Campus) of Region IX and General Santos City High School of Region XII, students said that the computers allowed them to prepare for college through advanced learning, while in Tomas Cabili National High School in Iligan City, students anticipated that they would be needing computer knowledge and skills in college, which they now already possess.

Parents also noticed that their children used the computer and Internet for exploring options for their future. In particular, the students began **searching for schools** (97 FGDs) and **scholarship programs** (87 FGDs) for college.

4.1.4. Attitudes toward Use of Computer and Internet

Survey Results

The CLIC assistance provided to surveyed high schools has helped developed a good attitude toward using computers and the Internet (see Table 13). This gave students a desire to learn more about computers as it helped them connect to the world outside their community. It inspired them to complete their high school studies and pursue college education, as it gave them a tool that would help them in their college coursework. This can be attributed to their experience in improving their high school coursework through computer and Internet use. However, they have a poor attitude in looking forward to use computer facilities in school.

Though Table 14 generally revealed the same average level of attitude towards computer and Internet use across regions and level of conflict in areas, there is still a differentiated rating in some attitudes that can be observed among students. This is due to the interaction between the environment of the region and the level of conflict in areas where high schools attended by students are located.

Table 13: Descriptive Summary of Students' Attitude toward Computer and Internet

Attitude Toward Use of Computer and Internet	$\overline{X}$	**sd**
Look forward in using computer facilities in school	2.28	0.54
Tool in improving class performance	2.68	0.32
Desire to learn more about computer	2.95	0.55
Source of information	2.64	0.55
Tool to connect with the world	2.72	0.53
Source of social issues affecting the country	2.61	0.58

An inspiration to finish high school education and proceed to college	2.71	0.55
Increases interest to take computer or information technology-related courses	2.63	0.58
	2.65	

Legend: 1.00–2.32 = poor attitude; 2.33–3.65 = good attitude; 3.66 – 4.98≈5 = very good attitude

Table 14: Comparison of Students' Perceived Level of Attitude toward Use of Computer and Internet by Region and by Conflict Area

$\overline{X}$			Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Region	Level of Conflict							
	Moderate	High	Corrected Model	2.28	6	0.38	3.92	0.001
9	2.61	2.63	Intercept	1204.16	1	1204.16	12445.48	0.000
10	2.68		Level of Conflict	0.28	1	0.28	2.89	0.089
11	2.75		Region	2.09	5	0.42	4.31	0.001
12	2.67	2.78	Error	215.96	2232	0.10		
13	2.68		Total	16009.63	2239			
ARMM	2.66	2.78	Corrected Total	218.24	2238			

Legend: 1.00–2.32 = poor level of attitude; 2.33–3.65 = average level of attitude; 3.66–4.98≈5 = high level of attitude

Table 15 shows that the attitudes of those students who are recipients of GEM2 CLIC project toward the use of computer and Internet moderately vary significantly from those who are GEM3 CLIC recipients. This implies that attitudes inculcated by GEM2 CLIC implementation in students, on Internet and computer use, is just the same as that inculcated by GEM3 CLIC implementation in its student-recipients. Moreover, the same skills were provided by GEM2 and GEM3 CLIC projects to their respective student-recipients, as revealed by Table 16.

Table 15: Students' Computer and Internet Skills and Attitude Toward the Use of Computer and Internet

Group	Skill			Attitude		
	$\overline{X}$	sd	t-prob	$\overline{X}$	sd	t-prob
Gem 2	3.26	1.26	0.07	2.67	0.30	0.04

Gem 3	3.37	1.24		2.64	0.33	

FGD Results

Students saw marked improvement in their school performance as a result of their computer literacy and Internet connectivity. The **better quality schoolwork** (91 FGDs) was evident in computer-encoded assignments and reports; and in school projects in PowerPoint format. This was compared to school reports and other projects handwritten on manila paper and hung on a wall, or what some students in Region X, XI and Caraga call "*bitay[huung]* tech." The Internet **increased their knowledge** (75 FGDs) and made it **easy to do research** for school (50 FGDs). Some even reported an **improvement in their grades** (26 FGDs).

Parents were also asked to describe any changes they observed among their children after they had learned to work with computers and the Internet.

In terms of knowledge and skills, parents confirmed that their children had indeed learned about: **Basic Computer Functions** (186 FGDs), **Researching with the Internet** (38 FGDs) and **Social Networking** (7 FGDs). They also noticed a boost in self-confidence, with the students becoming more **resourceful and idealistic** (23 FGDs), **more competitive with other schools** (20 FGDs), and **able to talk about computers** (13 FGDs).

In Region IX, some parents felt that their children were better prepared for college. They also noticed that their computer-literate children were now **able to teach their siblings** (24 FGDs), a response that actually ranks third among parents' observations.

KII Results

Key informants (340 KIIs) rely on the computer resources as a **source of information**. Connected to the Internet, students are able to research additional and updated information for their assignments. Some students turned to Internet to expound their Science Investigatory Project reports and other research projects. For schools that did not have continuous access to the Internet, students made use of Encarta, a CD-based multimedia encyclopedia. Students are now more connected "electronically" to their friends and family members through email and social networking. With the CLIC Project and other projects, the students now know the basic operation of computers, making them "**computer literates"** (105 KIIs).

4.1.5. Changes Observed in Students: Relationship of Students' Computer Skills and Attitude toward the Use of Computer and Internet

Though students have a highly varied perception of their skills in the use of computers than their attitude toward computers and Internet, it can be observed in Table 16 that they generally perceived the same level of computer skills and attitude toward use of computer and Internet. However, only 2.89% of students' skills on computer can be attributed to their attitude toward the use of computers and the Internet. This means that much of the significant relationship revealed between students' skills and attitude on computer can be attributed to other factors.

Because of the true relationship revealed between students' skills and attitude toward the use of computers, though the degree of attribution of attitude toward skill is statistically very weak, one can still possibly predict a student's skill level in computer use upon knowing his/her attitude level toward computer use in general. This can be done by considering the model ***Predicted Student's Skill Level = 1.514 + 0.669(Student's Attitude Level)*** retrieved from the regression results summarized in Table 17. This implies that if a student's attitude rating on the use of computers and Internet is 2.46, which is a good attitude level, by substituting it in the model, one can expect that such student may have an average skill level on computer.

Table 16: Correlation Summary between Skills and Attitude

Variable	$\overline{X}$	sd	r-value	r-prob
Skill	3.29	1.26	0.17	0.000
Attitude	2.66	0.31		

Legend: 1.00 – 2.32 = poor level of skill; 2.33 – 3.65 = average level of skill; 3.66 – 4.98≈5 = high level of skill
1.00 – 2.32 = poor attitude; 2.33 – 3.65 = good attitude; 3.66 – 4.98≈5 = very good attitude

Table 17: Regression Summary on Computer Skills and Attitude

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	97.67	1	97.67	63.51	0.000
Residual	3439.92	2237	1.54		
Total	3537.59	2238			
	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Betao		
(Constant)	1.514	0.22		6.74	0.000
Attitude	0.669	0.08	0.17	7.98	0.000

4.2 IMPACT ON TEACHERS

4.2.1. Computer and Internet Utilization in School

FGD Results

Teachers had dual roles of: 1) learning how to use the computer and the Internet, and 2) teaching computer classes for their students.

While more than half of the FGDs (134) admitted that these tasks were **challenging due to their limited knowledge of computers,** this initial apprehension eventually led to many positive realizations: for example, computers had **enhanced their teaching effectiveness** as shown by their students' interest in their lessons (32 FGDs); many of their **teaching tasks were made easier** (25 FGDs); they **needed to upgrade their teaching skills to keep up with technology** (4 FGDs) and **prospects for learning are made limitless** with the Internet (2 FGDs).

Many of the teachers' tasks were now being undertaken with the use of computers and the Internet, namely: **computation of Grades using Microsoft Excel** (186 FGDs); **encoding** major documents such as **lesson plans and test papers** (137 FGDs); **researching their subjects and topics** (118 FGDs); **and preparing instructional aaterials** (48 FGDs). Very popular among the teachers was the use of PowerPoint presentations in teaching, a more creative and easy alternative to writing on and hanging Manila paper which they called "*Bitaymax*" (coined from the Filipino word *bitay*, meaning "to hang",

Figure 8. Teachers research and write their lessons with the help of CLIC computer resources.

and the "Betamax" brand of video cassette recorders).

In some schools in three regions (IX, X and Caraga), the computer was used to **publish the school paper** (5 FGDs). In several schools in Region IX, the computers were used to enhance their Basic Education Seminars. The computer was also used to research dance steps and costumes in Don Pablo Lorenzo Memorial High School in Zamboanga City, Region IX. In Lake Sebu National High School in South Cotabato in Region XII, the school's time buzzer and bell were now computer-generated. In the Daniel Cruz National High School in Kidapawan City, also in Region XII, the teachers and school administrator credit email with helping them save time and resources in sending and receiving correspondences to and from the regional office of the Department of Education (DepEd). In Ponot National High School in Zamboanga del Norte in Region IX, they use social networking for accessing the DepEd Facebook page.

KII Results

From the KII results of 549 informants, the computer resources of CLIC were valued primarily **for helping the teachers in preparing and improving their teaching materials** (454 KIIs). Teachers were able to enhance their lesson plans, compute grades, improve presentation of their lessons through use of PowerPoint, fill out necessary forms prescribed by the DepEd and the school, research additional reference materials, and encode tests and lessons.

There were 372 informants who said that the computer resources were used in **teaching purely ICT classes and other integration subject**s. "Integration classes" refer to classes in "regular" subjects such as English, Pilipino, Math, Science and TLE (technical livelihood education) wherein the use of computers is part of the teaching/learning methodology. Teachers did research to enhance their lesson plans and make class activities more creative and interesting for the students.

Another use of the computer resources was for **communications** (121 KIIs). Teachers and school managers took advantage of email to send their forms and reports to the DepEd regional offices.

4.2.2. Benefits Gained from Utilization of Computer and Internet

Both teachers and students benefited from the use of computers and the Internet to perform several teaching tasks. Teachers expressed that the tedious process of **grades computation had been made easier and faster with Microsoft Excel** (186 FGDs). The same was true for **producing test papers, reports, lesson plans and other documents**, whch were now computer-encoded instead of handwritten. And with Internet access, teachers were able to conduct **research on classroom topics** (51 FGDs), **instructional materials** (128 FGDs) and **teaching strategies** (16 FGDs). The research allowed them to make better lesson plans, instructional materials and **visual aids** (128 FGDs) for their classes. In Region IX, some teachers appreciated the fact that, despite being in a rural area, they now feel part of "civilization" or the "modern world" through their computers

Figure 9: A Surallah NHS student demonstrates his skill in using Adobe Photoshop.

and Internet. In the same region as well as in Region X and ARMM, however, some of the senior or "retireable" teachers were less receptive to the new technology, because they felt they were too old to learn it or the images on the computer monitors "hurt their eyes" or made them dizzy.

4.3. School Administrators' Perspective on the Utilization and Impact of CLIC Resources

4.3.1. Observed Changes on Students' Attitude toward Learning and Teachers' Performance

Through KIIs, school administrators felt that the computer resources **made learning more interesting, if not easier**, for the students (388 KIIs). First, students now had access to the Internet, allowing them to do research online. Previously, they had to make do with the school library and had to compete with one another to get hold of the few books available there. Even in CLIC schools that did not have Internet connection (in cases where this was intermittent or discontinued), students could still do research using the Encarta, an electronic encyclopedia. In addition to research, they could access interactive educational websites. The availability of information at their fingertips made the students "excited" to do their assignments. Some students were "inspired" by the examples and additional knowledge they got online. They also become more aware of events taking place outside their community and the country.

In terms of presentation, the students' work (such as assignments and term papers) was now computerized, with better lay-out in comparison to the work they had produced using old typewriters. The time required to complete assignments was shortened because of the improved access to information through the Internet and the software technology that made production easier.

School management, teachers and ICT/Computer Laboratory In-Charge personnel unanimously agreed that the **computer resources had made teaching easier** (361 KIIs). For instance, they said that "in one click", they could get the information they needed. The teachers' work became easier and more efficient – they could encode lessons and reports, they were less burdened with paperwork (as required by the school and DepEd). Teachers spent less time lecturing in classes because they had more engaging visuals (using PowerPoint) with which to explain lessons, and would also incorporate audio files in their presentations. Apart from PowerPoint, teachers utilized other multimedia tools, showing videos relevant to their lessons. Students were also observed to be more interested in lessons because of these visual and audio aids. Teachers felt more confident because they had been able to update lessons with the help of the Internet. Previously they had to make do with relatively outdated printed textbooks.

When the computer resources were relatively new, the "old" teachers in Baroy, Lanao del Norte were concerned about radiation from computers. But in the end, these "retirable" teachers actually loved the computers and continued to enhance their computer skills. Teachers used to bring so many books and so much manila paper to their classes that they were overburdened by just carrying these necessary materials; now they only bring a USB and a laptop, which are a lot lighter than paper-based books.

Computing grades has become easier for the teachers with the use of the Excel spreadsheet. They commit fewer errors: they can easily double check the entries and even rank the grades automatically.

4.4. EFFECT ON COMMUNITY PERCEPTION ON GEM-USAID SUPPORT

4.4.1. Role and Involvement of PTAs in the Project

Some PTAs played an important role for the sustainability of the CLIC Project in some areas. As can be seen in Table 18, slightly over 58% of the FGDs credited the PTA for the maintenance of the computers. Forty-two percent of the FGDs cited providing financial assistance in the form of monthly dues paid by the PTA for the Internet connection and electricity bills. In one FGD, a participant mentioned providing night-time security for the Computer Laboratory as a PTA contribution to the project.

Table 18: FGD Result on the Role of PTA in CLIC

Role of PTA	Frequency n=225	Percent
Maintenance of computers	131	58.2
Financial Assistance	96	42.7
Counterpart for electricity	38	16.9
Provision of night time security	1	0.4

In 24 schools, the PTAs \succeeded in procuring more computer units for the school Computer Laboratory, independent of CLIC. In 19 schools, the PTAs were preparing project proposals to avail of computers from donor agencies. Other PTAs are prioritizing other projects for the school, such as acquisition of flat screen television or purchasing materials for the perimeter fence.

In 84 FGDs, parents expressed that the PTA is willing to support the CLIC project. In 38 FGDs, the PTAs claimed that they are proud to be part of the project that the parents are very helpful, participative and involved. Some went so far as to say that the CLIC project is an achievement of the PTA (12 FGDs).

KII Results (see Table 19) corroborated the FGD findings. Majority of the informants (82.7%) were aware that the PTA was involved in the repair and maintenance of the computer units. Nearly 20% of the informants knew that PTA contributed to the payment of the electricity bill of the Computers Laboratory. Forty-three of the informants were aware that the PTA also contributed financially by organizing fundraising activities to generate fundd to purchase tables and chairs, pay for the honorarium of the IT Laboratory Teachers, and procure additional computer sets.

Figure 10. An image symbolizing peace occupies one wall of the computer laboratory in Saravia NHS.

While half of the FGDs and key informants considered the PTA to have made a positive contribution to the project, nearly half of the key informants (49%) say that the PTA's involvement in the acquisition of computers and establishment of Internet connection was limited to formally requesting that the school be included as one of the recipients of the CLIC project, and in signing the Memorandum of Agreement, where one provision includes keeping safe the room/place where the computer resources are being kept. There were informants (24%) who saidt that the PTA had no role in securing the computer packages for the school. Seven (7) others said that since they were newly-appointed, they had no idea as to the involvement of the PTA in getting the computers.

Table 19: KII result on the role of PTA in CLIC

PTA's Involvement	Frequency n=549	Percent
Maintenance and repair	454	82.70
Signing MOA	269	48.99
Fundraising	236	42.99
No role	130	23.68
Payment of electricity bill	91	19.83
Newly appointed, not knowledgeable about the project	7	1.28

4.4.2. Perceived Effect of CLIC Resources on Student Performance

The computer and Internet resources were seen to exert a positive influence on the quality of students produced by the high schools. According to 486 key informants, students became more productive, creative, competitive, and inquisitive. With the innovations introduced by the teachers, the schools are now registering higher enrollment rate (as they slowly built reputation for providing solid and updated education to students). One guidance counselor based in Iligan City observed that more students were enrolling in their school, reportedly to avail of the computer classes.

Students become more attentive during classes. A PTA president in Lanao del Norte says that "computer technology seems to have improved the students' learning capacity. Students appear to exhibit higher memory retention, aided by colors, pictures and videos." A principal in Lanao del Norte shares with pride how the students have become more competitive, even getting an award for the National Achievement Test in 2010 and winning in competitions in 2005.

A parent and PTA treasurer in South Cotabato described how his son had improved his time management skills. The son plans his day ahead and does his house and school chores efficiently so he

will have time to surf online and play computer games. An officer-in-charge of a school in Sarangani province said that as students learn more about computers, they tend to demand more specialization.

4.4.3. Perceived Contribution of CLIC Resources to Community

Relative to the perceived contribution of CLIC resources to the community, the FGD responses were not very specific to CLIC; instead, the respondents were highly generous with praise and words of appreciation for GEM-USAID assistance. Responses ranged from **gratitude** (107 FGDs), to describing the donor agency as **beneficial, advantageous, helpful, useful** (96 FGDs), and a **good development partner** (66 FGDs). Some even compared GEM-USAID to **angels or saviors** to the community (8 FGDs). The most specific responses given are that CLIC **improved computer literacy for children** (19 FGDs) and gave **quality education** (2 FGDs).

When asked who they thought was responsible for providing computers and Internet connection to their school, all 225 FGDs acknowledged GEM-USAID as their donor.

KII results revealed that the computer resources provided by the CLIC project were appreciated for enabling students and teachers to cross the digital divide (476 KIIs). This appreciation was more pronounced in schools located in remote areas, where daily practices and perspectives are traditional, and relatively free from western influence. Students and teachers feel they are now computer literates – they know the basic operation, they can navigate on different software applications.

Figure 11. A newspaper clipping is posted inside the CLIC computer laboratory in a school in Davao City.

Second to computer literacy is **self-improvement** (341 KIIs) experienced by the teachers and the students. The computer resources they have individually and collectively improved their skills, encouraged resourcefulness and creativity, and made them more competitive. A principal in Cotabato City said that students were more confident about going to college. Those seeking employment believed that they had computer skills that could give them an edge over other job applicants.

With the information technology giving them access to information (140 KIIs), the **students gain more knowledge and are aware of the events, developments and trends happening outside of their communit**y. Teachers and students alike have made friends and get connected with their relatives in other areas through emails and social networking sites.

The benefits of the computer resources have stretched beyond the confines of the school. In some barangays, the local leaders and residents have also made occasional use of the computer resources and the Internet. In Maigo, Lanao del Norte, farmers requested information for their livelihood (i.e. modern farming technology). A teacher in Initao, Misamis Oriental, said that their school had student-graduates who were earning income from computer troubleshooting, reformatting and encoding.

4.4.4. Perceived Effect on Peace and Security in the Community

More than half of the informants (284 KIIs) expressed **appreciation for the partnership between the GRP and USG in bringing computer resources to their communities**. The two governments were seen as working together to bring quality education, particularly in poor and conflict-affected communities in Mindanao. Seeing that a country like the United States had concerned itself with their children's education prompted parents to enroll their children in school, as a way of showing that they (parents) valued this particular support. A different perspective was offered by the PTA president of a school in Zamboanga Sibugay, who expressed sadness that the Philippine government by itself could not satisfactorily address the needs of Filipino students.

Citing the computer resources provided to the schools, the informants believed that the US and the Philippine governments were **concerned about community access to technology** (243 KIIs) so that students could compete globally. A principal in Sapad, Lanao del Norte, stated that his daughter, a nurse, was able to pass the qualifying exam in Saudi Arabia through the use of computer. If she did not have an early experience in using computers, she would have difficulty in passing the exam. The guidance counselor of Tomas Cabili National High School in Iligan City said that their community has seen a rise in the number of Internet cafés being established near schools. For almost half of the informants (244 KIIs), the computer resources provided by the US governments were seen to have **educating and empowering effects**.

Nearly 10% of the informants (54) were **happy with the economic impact** of the computer resources on their community. They pointed out that income is generated by the Internet cafés; and that computer-literate students are better-prepared to proceed to college and get a job, and earn better incomes to support their families, particularly if they find employment abroad. In Fatima, General Santos, a school offers computer training for women and out-of-school youth, hoping to somehow improve their skills to earn income.

Finally, the informants feel that the partnership has somehow brought peace and unity. The access to information has made the people (through their children) more knowledgeable. They are more aware of the things happening in other parts of the world, thus expanding their horizons. This awareness engenders a more positive outlook, which is a basis for promoting peace.

4.5. ANALYSIS OF SECONDARY DATA

4.5.1. Electrification and Internet Connection

The assessment team solicited perception on the status of electrification in the CLIC schools as shown in Table 20 and Table 21. Results show that the availability of electricity in the CLIC schools did not change in Regions 9, 11 and 13 from the start of CLIC project to the present. Changes were observed in Regions 10, 12 and ARMM yet very minimal.

Table 20: Availability of Electricity in CLIC Schools, by Region

Item	Region 9	Region 10	Region 11	Region 12	Region 13	ARMM

	Before (%)	Today (%)	Before (%)	Today (%)	Before (%)	Today (%)	Before (%)	Today (%)	Before (%)	Today (%)	Before (%)	Today (%)
With regular power service, 24 hours a day	93.18	93.18	76.47	82.35	100.0	100.0	87.32	87.32	50.00	50.00	56.14	50.88
Power outage/interruption experienced at least once a day	-	-	5.88	0.00	-	-	4.23	4.23	0.00	0.00	12.28	17.54
Power outage experienced weekly	-	-	17.65	17.65	-	-	2.82	7.04	37.50	37.50	14.04	15.79
Power outage occurred too frequently to count	6.82	6.82	-	-	-	-	5.63	1.41	12.50	12.50	17.54	15.79

Table 21: Availability of Electricity in CLIC Schools, Mindanao, by Level of Conflict

Item	Mindanao		High Conflict		Moderate Conflict	
	Before (%)	Today (%)	Before (%)	Today (%)	Before (%)	Today (%)
With regular power service, 24 hours a day	78.22	77.23	60.0	60.0	78.28	77.27
Power outage/interruption experienced at least once a day	5.45	6.44	-	-	5.56	6.57
Power outage experienced weekly	7.92	9.90	-	-	8.08	10.10
Power outage occurred too frequently to count	8.42	6.44	40.0	40.0	8.08	6.06

In terms of the status of Internet connection, CLIC schools administrators were asked to rate the consistency and robustness of the Internet connection during the initial year of CLIC and current speed. The ratings ranged from 1.00 to 5.00, 1.00 being intermittent or slow, and 5 representing very fast and consistent Internet connection. The mean rates and standard deviations are presented in Table 22. In general, the CLIC computers had an average speed Internet connection when CLIC implementation began and remained the same until the survey period. This is true in all regions, moderate and high conflict areas.

Table 22: Consistency and robustness of Internet connection, Mindanao, by Region, by Level of Conflict

Item	CLIC Initial Year	Current

	Mean	Std. deviation	Mean	Std. deviation
Mindanao	2.92	1.09	2.65	1.22
Region 9	2.81	0.92	2.26	1.19
Region 10	2.47	1.01	3.18	1.24
Region 11	3.67	1.03	2.33	1.37
Region 12	3.04	1.12	2.85	1.23
Region 13	2.75	1.16	2.38	1.06
ARMM	2.92	1.17	2.60	1.18
High Conflict	2.60	0.55	2.75	0.96
Moderate Conflict	2.93	1.10	2.65	1.23

Legend: 1.00-1.67=slow Internet connection, 1.68-3.35=average Internet connection, 3.36-5.00=fast Internet connection

4.5.2. Selected School Performance Indicators

To further evaluate the CLIC project, the Impact Assessment Team collected several educational performance indicators for both CLIC and non-CLIC secondary schools. These indicators include Cohort Survival Rate (CSR), Completion Rate (CR), Participation Rate (PR), Dropout Rate (DR) and the National Secondary Achievement Test Mean Score (NSAT).

Cohort Survival Rate

The Department of Education (DepEd) and United Nations Educational, Scientific and Cultural Organization (UNESCO) defined cohort survival rate as the proportion of enrollees at the beginning grade or year level who reach the final grade or year level at the end of the required number of years of study. Results of the comparison analysis for this indicator are presented in Table 23.In general, results revealed that the survival rate of students for the last eight (8) years of the surveyed schools almost did not change, however, schools with CLIC intervention; on the average, shows higher cohort survival rate compared to those schools without CLIC with 73.2% and 69.5% respectively. The difference is statistically significant. This result is also consistent with Region 12. Changes in CSR in other Regions on the average did not statistically differ between schools with or without CLIC intervention.

Table 23: Cohort Survival Rate Comparison between the CLIC and Non-CLIC Schools, by Region

Year	Mindanao		Region 9		Region 10		Region 11		Region 12		Region 13		ARMM	
	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC
2004	73.5	70.1	65.9	64.5	75.1	78.5	61.0	99.3	72.0	67.3	69.3	23.3	83.3	70.5
2005	74.4	67.4	69.2	70.8	70.3	74.3	46.7	68.4	72.4	67.2	74.3	25.6	84.9	81.8
2006	71.8	71.1	70.7	76.8	76.6	76.6	50.0	nd	67.5	55.6	66.2	nd	80.7	87.0
2007	72.4	65.9	71.4	64.5	74.8	76.8	58.8	nd	69.0	58.3	70.6	nd	79.4	75.1

2008	72.8	70.2	72.9	66.8	78.9	78.5	65.4	nd	70.1	64.3	71.4	nd	75.7	76.2
2009	72.7	70.6	73.2	74.4	72.6	78.4	67.1	nd	71.0	60.6	70.2	nd	76.2	75.1
2010	74.2	69.5	73.7	88.1	70.7	75.6	76.8	100.0	72.6	65.0	73.3	nd	78.5	62.2
2011	73.8	71.5	nd	nd	79.1	78.6	70.5	81.9	nd	63.5	69.5	nd	77.0	70.6
Mean	*73.2*	*69.5*	*71.0*	*72.3*	*74.8*	*77.2*	*62.0*	*87.4*	*70.6*	*62.7*	*70.6*	*24.4*	*79.5*	*74.8*
Mean	0.03673		-0.01266		-0.02396		-0.23648		0.0815		nd		0.04641	
Std. Deviation	0.02244		0.07373		0.02493		0.11105		0.02727		nd		0.07245	
Std. Error Mean	0.00793		0.02787		0.00881		0.05552		0.00964		nd		0.02562	
t-stat	4.63		-0.454		-2.719		-4.259		8.454		nd		1.812	
Sig (2-tailed)	**0.002**		0.666		**0.03**		0.024		**0.000**		nd		0.113	

nd- no available data, statistical test was not conducted.

To extend the analysis to whether CLIC intervention was affecting the CSR in all the surveyed schools, the data set was dissected to separate those schools with CLIC intervention from 2004 to 2007 and 2008 to 2011 to create a before and after CLIC data set. Results revealed that there is an improvement in the student survival rate after the exposure to CLIC by 1.51%. However the difference is not statistically significant. In terms of the level of conflict, results show that schools in the moderate conflict areas have higher CSR than those schools in the high conflict areas with 73% and 70% respectively. However, statistically, the difference is not significant.

Completion Rate

Completion Rate refers to the percentage of first year entrants in a level of education who completed the level in accordance with the required number of years of study. Data reveals that in general, there was no significant difference between the CLIC and non-CLIC schools in the entire survey as shown in Table 24, except for Regions 10 and 13, where completion rate is higher in the non-CLIC schools. There is also no significant difference in CR between the schools in the high and moderate conflicts areas.

Table 24: Completion Rate Comparison between the CLIC and Non-CLIC Schools, by Region.

Year	Mindanao		Region 9		Region 10		Region 11		Region 12		Region 13		ARMM	
	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC
2004	68.5	71.8	63.0	73.3	69.8	79.4	47.0	98.7	68.6	67.4	66.2	0.0	74.8	67.5
2005	69.0	67.2	68.5	61.1	74.8	70.7	44.5	67.5	64.7	62.4	73.4	95.6	76.3	79.0
2006	68.1	71.0	70.0	70.5	76.7	77.5	51.9	nd	63.6	57.4	69.7	91.8	71.8	83.1
2007	68.2	69.1	69.4	69.4	76.1	78.7	59.0	nd	64.1	60.9	64.6	93.0	71.5	73.8
2008	71.7	70.9	70.8	60.3	82.0	83.6	68.5	nd	65.6	63.4	78.0	100.0	75.3	79.5
2009	70.7	67.7	69.2	69.6	75.1	82.4	67.6	nd	65.9	53.4	74.0	100.0	76.6	70.5
2010	72.4	67.5	66.3	80.3	70.3	81.0	72.9	nd	69.7	65.4	77.6	nd	79.2	58.5
2011	74.1	68.6	nd	nd	77.9	83.6	72.6	nd		73.9	74.0	nd	68.5	58.5
Mean	*70.3*	*69.2*	*68.2*	*69.2*	*75.3*	*79.6*	*60.5*	*83.1*	*66.0*	*63.0*	*72.2*	*80.1*	*74.3*	*71.3*
Mean	0.01081		-1.04286		-0.04293		nd		0.03486		-24.14		0.02978	

Std. Deviation	0.03344	8.75497	0.04977	nd	0.04719	2.92027	0.10058
Std. Error Mean	0.01182	3.30907	0.01759	nd	0.01669	1.30599	0.03556
t-stat	0.915	-0.315	-2.44	nd	2.089	-18.484	0.838
Sig (2-tailed)	0.391	0.763	**0.045**	nd	0.075	**0.000**	0.43

nd- no available data, statistical test was not conducted.

Participation Rate

Participation rate is the ratio between the enrolments in the school-age range to the total population of that age range. Table 25 shows the PR per region from 2004 to 2011 between CLIC and Non-CLIC schools. Results show that in general, there is no significant difference between the PR in the schools with and without CLIC assistance, except for Northern Mindanao where PR is higher in the Non-CLIC schools.

Table 25: Participation Rate Comparison between the CLIC and Non-CLIC Schools, by Region.

Year	Mindanao		Region 9		Region 10		Region 11		Region 12		Region 13		ARMM	
	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC
2004	74.4	69.9	79.6	69.5	62.3	84.0	60.0	nd	73.6	85.8	nd	Nd	75.5	58.1
2005	75.8	80.6	80.0	77.3	65.0	75.0	65.0	nd	74.9	81.7	nd	100.0	77.9	75.8
2006	75.9	75.1	78.3	84.8	67.4	86.2	68.0	nd	77.1	51.7	74.0	100.0	75.4	90.3
2007	76.3	72.9	78.1	89.9	69.0	82.7	70.0	nd	77.0	56.5	76.0	100.0	76.8	67.5
2008	77.7	74.9	77.8	87.7	71.9	76.2	73.0	nd	78.9	60.1	93.4	95.5	76.6	75.3
2009	77.5	77.3	82.7	87.0	68.7	75.5	47.5	nd	78.6	69.9	86.0	100.0	76.6	70.7
2010	78.5	67.8	80.1	88.8	71.2	79.0	1.0	nd	81.8	72.4	88.8	Nd	78.5	44.7
2011	72.4	nd	nd	nd	88.1	Nd	Nd	nd	Nd	nd	95.4	Nd	72.5	Nd
Mean	*76.1*	*74.1*	*79.5*	*83.6*	*70.4*	*79.8*	*54.9*	*nd*	*77.4*	*68.3*	*85.6*	*99.1*	*76.2*	*68.9*
Mean	0.02757		-4.05714		-0.09255		nd		0.09125		-16.525		0.10343	
Std. Deviation	0.04436		7.82898		0.09537		nd		0.14123		10.95609		0.15657	
Std. Error Mean	0.01568		2.95907		0.03372		nd		0.05338		5.47804		0.05536	
t-stat	1.758		-1.371		-2.745		nd		1.709		-3.017		1.868	
Sig (2-tailed)	0.122		0.219		**0.029**		nd		0.138		0.057		0.104	

nd- no available data, statistical test was not conducted.

In terms of the level of conflict, results show that the participation rate in the high conflict areas is higher compared to the moderate conflict areas. The participation rate has significantly improved during the CLIC project as shown in Table 26.

Table 26: Participation Rate Comparison before and after CLIC, and by level of conflict

Paired Sample	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Before CLIC-After CLIC	-4.15046	1.29095	0.64548	-6.43	3	0.008
Moderate-High	0.12028	0.07122	0.02692	4.468	6	0.004

Dropout Rate

Dropout Rate is defined as the proportion of pupils or students who leave school during the year as well as those who do not return to school the following school year to the total number of pupils or students enrolled during the previous school year. Comparison results show that there is a significant difference in the dropout rate in both Region 12 and ARMM and both show that the dropout rate is higher in the CLIC schools than in the Non-CLIC schools by 2.27% and 4.89% respectively. The aggregate and the other Regions have no significant difference in dropout rate between with CLIC and Non-CLIC schools - Table 27. Results also revealed that there is no difference in the dropout rate within the CLIC schools before and after the project as shown in
Table 28. It is also surprising that the dropout rate is significantly higher in moderate conflict areas compared to schools in high conflict areas.

Table 27: Dropout Rate Comparison between the CLIC and Non-CLIC Schools, by Region

Year	Mindanao		Region 9		Region 10		Region 11		Region 12		Region 13		ARMM	
	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC
2004	8.0	7.0	6.6	9.5	7.4	9.8	0.1	5.4	7.8	4.5	8.2	Nd	9.7	6.0
2005	9.0	6.8	7.7	6.6	8.0	10.6	2.8	nd	9.9	5.6	4.9	4.4	10.2	6.1
2006	8.3	8.4	6.9	13.6	6.7	10.6	6.0	4.0	9.3	7.9	2.6	8.2	9.5	3.9
2007	7.6	6.1	5.8	6.5	8.5	8.8	4.9	4.0	7.0	5.5	3.6	7.8	10.3	4.7
2008	7.5	6.0	5.7	8.1	9.0	10.1	2.7	2.6	7.1	5.8	4.2	Nd	10.2	3.0
2009	7.5	4.6	7.9	5.5	7.1	4.6	3.4	nd	6.2	4.9	2.2	Nd	10.5	3.6
2010	6.7	7.5	5.2	7.9	7.5	18.0	3.7	nd	5.4	2.7	3.0	Nd	9.8	6.4
2011	6.5	nd	nd	nd	7.9	nd	5.9	nd	nd	nd	4.1	Nd	9.0	nd
Mean	*7.6*	*6.6*	*6.5*	*8.3*	*7.8*	*10.4*	*3.7*	*4.0*	*7.5*	*5.3*	*4.1*	*6.8*	*9.9*	*4.8*
Mean	0.00876		-1.7		-0.03567		-0.53529		0.02271		-3.1		0.04897	
Std. Deviation	0.01439		2.98831		0.0459		3.22865		0.01209		3.19531		0.01692	
Std. Error Mean	0.00509		1.12948		0.01623		1.61432		0.00457		1.84481		0.00598	
t-stat	1.721		-1.505		-2.198		-0.332		4.972		-1.68		8.185	
Sig (2-tailed)	0.129		0.183		0.064		0.762		**0.003**		0.235		**0.000**	

Table 28: Dropout Rate Comparison before and after CLIC, and by level of conflict

Paired Sample	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Before CLIC-After CLIC	-0.25305	1.83811	0.91906	-0.275	3	0.801
Moderate-High	-0.03312	0.02116	0.008	-4.142	6	0.006

National Secondary Achievement Test Score

The National Secondary Achievement Test is the national examination of Fourth (4th) year high school students in all public and private secondary schools which aims to determine their achievement level, strengths and weaknesses in key subject areas. The mean percentage score (MPS)[3]of the student by region from 2004 to 2011 are presented in Table 29 which shows that on the average, in Mindanao, the test score of students is very low, very far from the passing MPS of 75%. This reflects the poor quality of education across the island. The results of the comparison between the CLIC and Non-CLIC schools in aggregate shows that students in schools with access to CLIC materials has a significantly higher MPS of around 5.36% compared to those students in schools without CLIC. This is also true in schools surveyed in ARMM. The result of the before and after comparison shows that there was a significant improvement in the MPS of students within the CLIC schools as shown in Table 30.

Table 29: National Secondary Achievement Test Score Comparison between the CLIC and Non-CLIC Schools, by Region.

Year	Mindanao		Region 9		Region 10		Region 11		Region 12		Region 13		ARMM	
	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC	CLIC	Non-CLIC
2004	57.8	43.9	63.9	50.7	51.7	40.5	nd	nd	47.2	44.7	49.3	Nd	71.3	42.5
2005	54.3	50.5	62.4	41.4	51.6	49.2	43.0	nd	46.5	63.8	46.2	Nd	70.9	57.9
2006	52.6	45.4	50.4	46.2	47.7	48.6	43.0	nd	44.4	33.2	59.9	Nd	61.0	53.0
2007	52.5	52.5	58.1	65.6	48.2	52.2	46.4	nd	46.9	39.7	64.8	71.3	56.1	51.3
2008	54.1	54.5	61.1	69.9	45.7	46.1	47.8	nd	48.1	46.8	67.3	61.7	60.8	50.9
2009	52.4	50.5	56.7	46.0	46.4	52.8	43.7	nd	47.4	50.6	61.8	74.3	61.2	45.5
2010	55.6	54.1	53.7	69.4	49.7	47.7	52.1	nd	51.4	59.2	67.6	Nd	63.9	43.5
2011	57.5	42.5	56.7	nd	52.2	42.5	45.3	nd	53.8	nd	71.7	Nd	55.2	nd
Mean	*54.6*	*49.2*	*57.9*	*55.6*	*49.2*	*47.5*	*45.9*	*nd*	*48.2*	*48.3*	*61.1*	*69.1*	*62.5*	*49.2*
Mean	5.3625		2.44286		1.705		nd		-1.403		Nd		14.028	
Std. Deviation	6.09987		13.45224		6.171		nd		8.996		Nd		7.623	
Std. Error Mean	2.15663		5.08447		2.182		nd		3.18		Nd		2.695	
t-stat	2.487		0.48		0.782		nd		-0.441		Nd		5.205	
Sig (2-tailed)	**0.042**		0.648		0.46		nd		0.672		Nd		**0.001**	

nd- no available data, statistical test was not conducted.

Table 30: National Secondary Achievement Test Score Comparison before and after CLIC, and by level of conflict

Paired Sample	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Before CLIC-After CLIC	-15.211	7.87227	3.93614	-3.864	3	0.031

[3]MPS indicates the percentage or the ratio between the number of correctly answered items and the total number of test questions.

Moderate-High	nd	nd	nd	nd	nd	nd

4.6. STAKEHOLDERS' PROPOSED PROGRAM DESIGN FOR SIMILAR PROJECTS

4.6.1. Recommendations from the Students

Nearly 60% (327) of the informants say that the **number of computer units** vis-à-vis the student populationin school is the most limiting factor of the CLIC Project. With limited computers, a student has to share computer time with four others which limits the individual hands-on. In Isulan, Sultan Kudarat, it will take 2 to 3 sessions to allow all students who share one computer to do hands-on, stretching out the time needed for a particular topic. For others, "observing" how it is done must suffice.Given that, the teachers also have limited time to avail of the computers for their own needs. Defective computer units have further worsened the lopsided user-to-computer ratio.

Figure 12. Three students share one computer in Polomolok NHS.

The **strength and constancy of Internet connection** (124 KIIs) is also regarded as a restrictive factor. Connecting takes time because of the slow signal and if they managed to connect, browsing websites and loading pages move to a crawl. In some schools, they are not able to sustain the Internet access beyond one year because they could not afford the connection fees.

Informants identify **specifications of the computers** (27 KIIs) as another problem, referring to the low memory (inability to stock bigger files and the length of time necessary to process commands). The informants also mention "expired" software programs, affecting the full usage of the applications.

One negative effect of Internet access is that students are **enticed to play online**games (17 KIIs), which can affect their study hours. Informants also cite the lack of **sustainability** (17 KIIs), due to the lack of financial resources available to and from the PTA or the school to carry on with other financial responsibilities.

4.6.2. Recommendations from the Teachers

FGD Results. The teachers gave recommendations identical to those of the students, when asked to enumerate the best approaches for addressing the current limitations of the CLIC project, i.e. upgrade of Internet connection and provision of additional computer units (175 and 166 FGDs, respectively), but in reverse order. They also suggested a computer literacy training series for themselves (25 FGDs) and an upgrade of their existing computers (25 FGDs). There were also some computer "housekeeping" suggestions: prohibiting computer games (12 FGDs), establishing rules for computer use (5 FGDs) and limiting computer class size to no more than forty (40) students (4 FGDs).

KII Results. From the KII results of 206 teachers (referring to the ITC/Laboratory In-Charge and those teaching other subjects but using the computer for their work), they also recommended providing more computers per school (62 KIIs). They believed that with a one-to-one ration of computers to students in each computer training class, learning would proceed more quickly. More computer units should also mean dedicated allocation for the teachers. Their 2nd recommendation was to have a faster Internet connection (49 KIIs) and to choose Internet service providers that have strong, steady signals or better bandwidths. If possible, the Internet service fee should come out of of the school budget. Their 3rd recommendation was to provide more training (40 KIIs) to the teachers in PC repair and troubleshooting, software application, and other technical upgrading skills. Their 4th recommendation (36 KIIs) is focused on the computer laboratory room – that it should have bigger space, more equipment (such as an LCD projector), technology-related books and manuals, with air conditioners and additional printers. Their 5th recommendation was to have regular PC repair and trouble-shooting services to stretch the useful life of the computer units.

4.6.3. Recommendations from the School Administrators

A total of 203 school administrators who were interviewed made the following recommendations for future CLIC Projects:

1. The number of computer units to be given to a school should correspond to the number of students taking computer classes (65 KIIs)
2. Computer units should have the latest technical specifications (20 KIIs)
3. There is a need for faster Internet connections (54 KIIs).
4. There is a need for continuous teachers' training on information technology and new software programs, including attendance at workshops and seminars throughout the duration of the project (65 KIIs).
5. The Computer Laboratory should have more space and be fully-furnished (31 KIIs), with air conditioning units, LCD projectors for presentations, and more chairs and tables. More space is needed to accommodate more students per computer session.

4.6.4. Recommendations from the Parents/Community

FGD Results. For a similar project in the future, the community strongly recommends that technical staff to do monthly project monitoring (100 FGDs). Next to this, they have some recommendations to improve software/computer literacy training for teachers (81 FGDs) and a training module (56 FGDs); and additional computer units (59 FGDs) and the upgrading of Internet connection (32 FGDs).

Other than the suggestion to remove the currently installed computer programs, the community feels that there is no other aspect or component of the CLIC project that should be minimized or removed.

Figure 13. Non-functional computers are set aside for repair in Fatima NHS.

KII Results. Results from the KIIs (136 PTCA officials) showed that they confirmed the need for additional computer units (34 KIIs) to be distributed per school to give the students enough time to use the computers. The ideal ratio, as echoed by other key informants, is one computer per student per class. Besides more computer units, these KII stressed that these units

should have Internet access that is strong and fast (25 KIIs). Their 3rd recommendation is additional room for the computer laboratory (13 KIIs). Their 4th and 5th recommendations are for additional teacher training or the hiring of additional IT personnel who can teach the students (14 KIIs), and better technical support for repair and trouble-shooting (11 KIIs).

CHAPTER 5 – SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1. SUMMARY

A survey was conducted among the students of CLIChigh school recipients in order to gather feedback on the following:

- Basic use of computers and Internet in school and outside school;
- Perceived skills on computer applications; and
- Attitude toward use of computers and Internet.

Results show that computers provided by CLIC project were basically utilized by students for their school requirements and for them to connect to the world through Facebook or Yahoo web-based email. More female than male students made use of these computer and Internet facilities, particularly in Mindanao areas with a moderate level of conflict. The familiarity with computers and the Internet provided through CLIC probably prompted students to make use of these outside their school campus, during free time or after class hours, mostly in nearby computer and Internet cafes. Their regular use of computers and the Internet, initiated by CLIC, made them perceive that they now had an average skill level in basic computer use, but that they still needed to enhance their skill in more advanced computer functions, such as designing websites, writing files on CDs, installing software programs, and scanning disks for viruses. When students were grouped by region and by level of conflict in their area, results show that those from Region 10, under moderate level of conflict, perceived themselves to have a higher level of skill in basic computer and Internet use than those from other regions. In the case of students revealed to have a good attitude toward the use of computers and the Internet, when grouped by region and by level of conflict, results show a slight variation. Such has prompted the analysis to identify a possible causal relationship between attitude and skills of students in the use of computers and the Internet, which revealed that only 2.89% of the total variation of students' skills can be explained by their attitude toward computer and Internet. Thus, much can be attributed to other factors. However, even with the low degree of relationship between skills and attitude, students' computer skill level can likely still be determined through their attitude toward computers and the Internet as such have been found to be statistically true in all cases.

5.2. CONCLUSIONS

In view of the findings of the survey conducted among students from CLIC-recipient high schools and reinforced by KII and FGD results, it can be concluded that students:

- Basically used the computers and Internet provided by CLIC project for their school requirements and for them to connect to the world through Facebook or Yahoo web-based

email. Such exposure to computer and Internet prompted them to access same services mostly from nearby Internet café during class break or after class hours.

- Generally, students perceived themselves to have acquired an average level of skills and attitude toward computer and Internet use. However, there is only a low degree of relationship between students' attitude and acquired skills. Their computer skills can be attributed more to other factors. The location seems to signify a possible contribution as students' skills appeared to be significantly differentiated when grouped by location (by region and by level of conflict).

- CLIC-recipient schools fared better overall than non-CLIC schools only on two school performance indicators: cohort survival rate and mean percentage score of students taking NSAT. However, for indicators such as completion rate, participation rate and drop-out rate, the differences between CLIC-recipient and non-CLIC schools were not statistically significant. This leads us to conclude that while **computers and Internet connections in schools are** essential components to school performance, the full weight of their contribution can only be had if the proportion of students with regular access to these resources is increased.

- GEM2 and GEM3 CLIC projects provided the same level of skills to their respective student-recipients on the use of computer and Internet. Both project phases made the student-recipients developed an average computer and Internet skill. The same is also revealed with regard to the attitude of the students on the use of Internet and computer. Both provided student-recipients to exhibit a positive attitude toward the use of Internet and computer.

- Referring to the objectives of this study, CLIC has kindled the interest of students to maximize computers and Internet use for their academic and personal life. It has, in most barangays, demonstrated that the Philippine and US Governments are committing resources to improve young people's access to economic opportunities. CLIC has allowed students and teachers to establish virtual presence through their personal email and social networking accounts.

5.3. RECOMMENDATIONS

- Sustain assistance provided by CLIC project to students in accessing computer and Internet use.
- Provide assistance to CLIC partner schools in helping school personnel to develop students' advanced skills in computer and Internet use.
- Identify other possible factors highly contributory to students' skills in using computer and Internet.
- Establish a common portal that will contain lessons, lesson plans, and multimedia educational materials that can be accessed by teachers and students to enhance learning.
- Support development of culturally relevant learning materials

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Annexes

A. Terms of Reference

B. Team Structure, Deliverables and Work Schedule

C. Data Gathering Instruments

C.1. Key Informant Interview Guide Questions

C.2. Focus Group Discussion Guide Questions

C.3. Student Survey Questionnaire

C.4. Secondary Data Checklist

D. CLIC School Profile