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Impact of Technology on the Academic Performance of Students and Teaching Effectiveness

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Abstract: **This descriptive study determined the use of computers of teachers and students and its effect to student's academic performance in public and private schools. The factors affecting technology self-efficacy, utilization, teaching competence and students' academic achievement were emphasized. Survey questionnaires, Focus Group Discussion and Key Informant Interviews were used. Respondents included 97 Teachers and 436 students that comprising the 19 public and private secondary schools in District VI, Division of Negros Occidental. Stratified Random Sampling technique were utilized in the selection of the respondents by schools. Statistical tools include frequency counts, percentage, mean, Mann-Whitney, O-test, Kruskall-Wallis H Test, Multivariate Analysis of Variance (MANOVA) and Multiple Linear Regression. The findings revealed the existence of significant relationship between students' academic performance and their computer literacy as well as students' technology utilization and their family income. Data showed that student's academic performance is highly influenced by the teacher's effective teaching and by the teacher's computer literacy nor by their competence in technology. Grade 7 students of private and public schools utilize technology the least while fourth year students utilize technology the most. No significant difference was found on self-efficacy among year levels.**

Keywords: **Technology, Academic Performance, Teaching Effectiveness, Quantitative Research.**

1. INTRODUCTION

Rationale:

Gone are the days when computers and electronic gadgets could only be afforded by the rich. In the Philippines, modern technology has taken a major part in people's lives, mostly the younger generation. A young student wouldn't consider her day complete without having used the internet. Facebook, for one, has turned into a virtual café where people gather together every day.

The Social breakers, an online statistical site, has ranked the Philippines to have the most active Facebook users in Asia, next to India and Indonesia. There are now approximately 30,214,120 users which is 30.24 percent of the country's population. The site further presents a pie chart showing the demographic distribution of Facebook users in the Philippines. Children in the age group of 13 to 17 comprise 17% of the total Facebook users (Socialbreakers.com, 2013).

This generation of students has often been said to be very adept with computers. Since the innovation of computers, people have been able to acquire information through the internet, online newspapers, online articles, and even online textbooks. Today, everyone with a personal computer has immediate access to the world's scripts and writing systems (Fischer, 2001). The internet has paved a path for the transmission of ideas and information. Thus, students are fed with so much information just by being exposed to this technology.

Even though technology has come into most schools already, it seems that teachers are not yet ready to make use of technology. It is a common knowledge that many teachers cannot use basic computer operations. But are they willing to

learn? Teachers will not be fully convinced that computers are, indeed, essential to student learning unless it is proven to be effective. The main question in this research is whether the use of computers in classroom instructions is helpful to both students and teachers in achieving lesson goals.

The goal of this research, therefore, is to have a closer look with the use of computer technology in the public high schools in the sixth district of Negros Occidental and identify its effects on both students and teachers. Furthermore, it aims to see the current technological skills of students and teachers. The relationship of students' academic performance and their teacher's use of technology will also be looked into. Once these data are collected, the researcher will be able to identify current technological consumption in schools and its effect to student performance.

Statement of the Problem:

The aim of this study is to investigate the influence of computer technology on teachers' effectiveness and academic performance of students in the sixth district of Negros Occidental and to compare technological competence between teachers and students from private and public schools. Specifically, this study aims to answer the following questions:

1. What is the socio demographic characteristics of the student respondents as to:

a. sex

b. grade/year level

c. educational attainment of parent

2. What is the socio demographic characteristics of teachers as to:

a. age

b. sex

c. civil status

d. educational attainment

e. length of service

f. number of subject/work load

g. monthly Income

3. How literate are students and teachers in terms of basic knowledge on computers, and in the use of computers in terms of self-efficacy and technology utilization when taken as a whole and when grouped according to:

a. Private schools

b. Public schools

4. What are teachers' computer competencies in terms of:

a. Knowledge and skills on basic computer applications

b. Use of appropriation office and teaching productivity tools

c. Facilities equitable to technology that addresses social and cultural diversity

d. Application of technology in developing students' higher order thinking skills and creativity

5. What is the teaching effectiveness of teachers in the 6th district of Negros Occidental when taken as a whole and when grouped according to:

a. Knowledge of the subject and teaching ability

b. Management of learning and professional competence

c. Teaching for independent learning and evaluation to students

d. Commitment and personality traits

e. Interpersonal relationships

6. What is the academic performance of students when taken as a whole and when grouped according to:

a. Public school

b. Private school

7. Is there a significant difference in computer literacy of students and teachers in terms of self-efficacy and technology utilization when grouped according to:

a. Private school

b. Public school

8. Is there a significant difference in computer competencies of teachers when grouped according to:

a. Private school

b. Public school

9. Is there a significant difference on students' and teachers' Computer Literacy when grouped according to their Demographic Characteristics?

10. Is there any significant difference in Computer Literacy of the students in terms of Self-Efficacy and Technology Utilization when grouped according to their family income?

11. Is there any significant Difference in the students' Academic Performance when grouped according to their Family Income?

12. Is there a significant relationship between students' and teachers' computer literacy in terms of knowledge and utilization and their academic performance?

13. Is there any significant relationship that exists between the Students' and teachers' Self-efficacy and Technology Utilization and Teachers' Teaching Effectiveness?

14. Is there a significant relationship between teachers' computer competencies and their teaching effectiveness?

15. Is there a significant relationship between teachers' computer competencies and students' academic performance

16. Is there a significant relationship between teachers' teaching effectiveness and students' academic performance?

Statement of Hypotheses:

In view of the aforementioned problems, the following hypotheses were formulated:

1. There is no significant difference in computer literacy of students in terms of self-efficacy and technology utilization when grouped according to:

c. Private school

d. Public school

2. There is no significant difference in computer competencies of teachers when grouped according to:

c. Private school

d. Public school

3. There is no significant difference on students' and teachers' computer literacy when grouped according to their demographic characteristics.

4. There is no significant difference in Computer Literacy of the students in terms of Self-Efficacy and Technology Utilization when grouped according to their family income.

5. There is no significant Difference in the students' Academic Performance when grouped according to their Family Income.

6. There is no significant relationship between students' and teachers' computer literacy in terms of knowledge and utilization and their academic performance.

7. There is no significant relationship between the Students' and Teachers' Self-efficacy and Technology Utilization and Teachers' Teaching Effectiveness.

8. There is no significant relationship between teachers' computer competencies and their teaching effectiveness.

9. There is no significant relationship between teachers' computer competencies and students' academic performance.

10. There is no significant relationship between teachers' teaching effectiveness and students' academic performance.

Theoretical Framework:

Technology has changed the way classroom instructions are handled today. Teaching strategies have undergone a paradigm shift from education's traditional ways to the most recent ones. The teacher's role has also changed from being the sole source of information to being the facilitator of learning.

Students' role has also changed from being receivers of spoon-fed information to being discoverers of learning. With the coming of modern technology, especially the computer, classroom instruction has been changed forever. Students can now perform different tasks and take up an active role in learning with the aid of information technology. And up to this day, researchers have been finding out the many benefits of modern technology to both students and teachers.

John Dewey's Learning by Doing Theory also contributes to the answer to the questions previously mentioned. The theory emphasizes that knowledge is the tool for managing experience. There is no such thing as genuine knowledge and fruitful understanding except as the offspring of doing.(Novack,2005) Knowledge power is achieved by sending the mind to school of nature to learn her processes of change. It is the learner and not the subject-matter which determines both quality and quantity of learning. Learning means something which the individual does when he studies. He learns in consequence of his direct activities. Thinking is the method of intelligent learning, of learning that employs and rewards the mind (Novack, 2005).

Students have different ways of learning and mastering new things. Howard Gardner presented seven "multiple intelligences" that are of equal importance in human beings and develop at different times and in different ways in different individuals.

Multi-media can go a long way to addressing these intelligences, much more than traditional teaching methods. With the use of computers, students' different learning styles can be tapped to maximize motivation, learning and skills development (Gardner, 1983).The USA's Information Technology in Teacher Education (ITTE) had proposed different ways by which technology could maximize learning in the classroom by applying it Gardner's theory of Multiple Intelligences. The first of these intelligences is the verbal/linguistic intelligence which is the ability to think, communicate, and create through words both in speech and in writing. Computer software which allows young children to write and illustrate their own stories before their fine motor skills are developed enough to allow them to do so by hand. Word processing software stimulates learners to interact more closely with their work and so on (ITTE, 1983).

When it comes to logical/mathematical intelligences, the ability to memorize and perform mathematical operations, think mathematically, logically, and analytically, multimedia products that graphically illustrate physics concepts and challenging visual/spatial tasks which develop mathematical and logical thinking skills among students.

Bodily/kinesthetic students who prefer to learn through physical coordination and dexterity may utilize educational games which challenge fine motor coordination while developing logical thinking skills and mastery over abstractions.

Students who are musically intelligent and have the ability to understand, appreciate, perform, and create music by voice or instruments or dance may find Musical Instrument Digital Interface (MIDI) useful in making music on an electronic keyboard, which can be made to sound like any instrument and then can be orchestrated electronically.

Students with interpersonal intelligence who could work cooperatively with other people and apply a variety of skills to understand others could work with clusters of students on computers and learn more than when working alone. Electronic networks linking students with their peers within the community and around the world.

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Students with intrapersonal intelligence and could understand, bring to consciousness, and express one's own inner world of thoughts and emotions could benefit from multimedia resources given by teachers which turn the classroom into center of student-directed inquiry.

Technology offers tools for thinking more deeply, pursuing curiosity, and exploring and expanding intelligence as students build "mental models" with which they can visualize connections between ideas on any topic. Technology supports such plans with electronic records, videotaped interviews, and multimedia portfolios of student work.

To sum up, this research has been founded on John Dewey's "learning by doing" complemented by Gardner's Theory of Multiple Intelligences. Students learn best when they have hands-on experience on the lesson, which can be achieved by using computers and other multimedia instructional materials. Specifically, students can learn best when their particular preferences are tapped so that learning becomes interactive and motivating, thus, maximized.

Conceptual Framework:

Using the aforementioned theory as basis, the conceptual framework was structured showing both the computer literacy of teachers and students and teachers' computer competencies as independent variables (inputs), and the teaching effectiveness and the academic performance of the students as the dependent variables (Figure 1).

The computer literary included the computer self-efficacy and technology utilization of teachers and students while the teachers' computer competencies involved their basic computer applications, use of appropriation office and teaching productivity tools, facilities equitable to technology that addresses social and cultural diversity, application of technology in developing students' higher order thinking skills and creativity.

The dependent variables included the teaching effectiveness measured in terms of their knowledge of the subject and teaching ability, management of learning and professional competence, teaching for independent learning and evaluation to students, commitment and personality traits and their interpersonal relationships as well as the academic performance of students.

Conceptual Framework

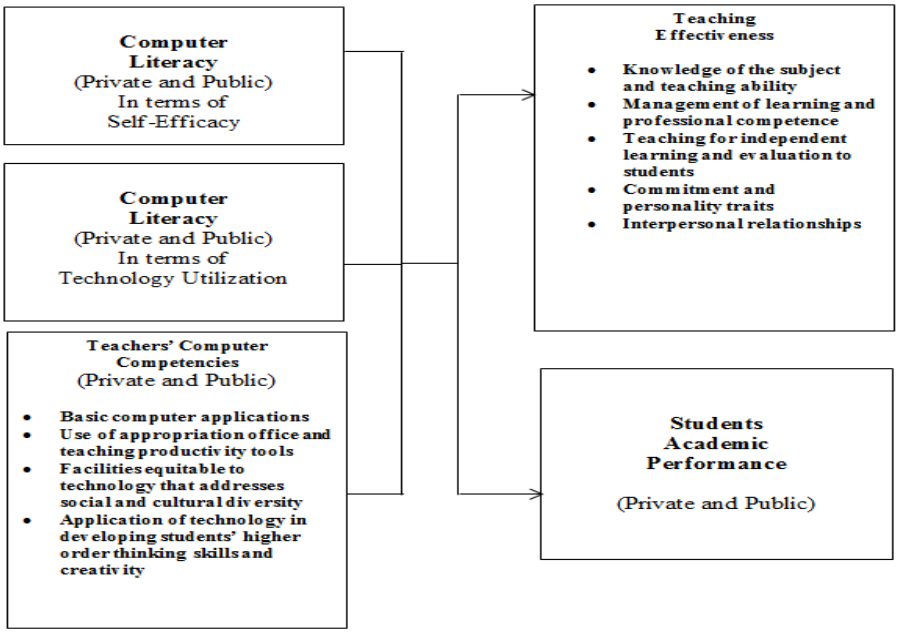

Figure 1: A Schematic Diagram Showing the Relationship between the Independent and Dependent Variables

Significance of the Study:

The results of this study are significant to the following:

Administrators. The study shall serve as a guide for the designers and implementers of school regulations, especially with regards to the consumption of computers among students. The findings of this study will enlighten school stakeholders

about the effects of computers to students and the extent of those effects. This will aid school administrators in intelligently formulating campus regulations and policies regarding students' use of computers in the campus.

Teachers: The findings of this research will help teachers understand the present youths' behavior in using computers. This will also guide them in motivating their students to use computers responsively.

Parents: This study will give the parents a clearer idea how children consume computers and the extent of their use of technologies that affect their children's performance at school. Thus, they will be guided on how to make rules for their children regarding the time they spend on different computer applications.

Future researchers: The results of this study will serve as a reference material for those who would like to conduct further study on similar topics.

Students: Making students aware of their behaviour would help them make better decisions and become responsible for their actions. When they realize the extent of their computer use and its influence on their studies, they would be more responsible in managing their study habits and computer use.

Department of Education: One important sector which would benefit from this study is the DepEd. This study can be counted as one of the bases for school regulations and even for the new programs and projects to be designed. The relationship between students' and teachers' computer use and the academic achievement of students can help DepEd evaluate the importance of technology in the school campuses.

Scope and Limitations of the Study:

This study was conducted to determine the use of computers of teachers and students and its effect to the academic performance of high school students in public and private schools in the southern part of Negros Occidental for school year 2013-2014.

Definition of terms:

Important terms in this study were defined operationally:

Use of Computers: This refers to the amount of time and extent of computer consumption. In this study, it specifically refers to the frequency in terms of days: everyday, 4-6 times a week, 2-3 times a week, once a week, and once a month.

Academic Performance: Refers to the ability of the students in school measured by grading. In this study, the subjects' indicators of levels of academic performance were taken from their fourth grading grades, Academic Year 2012-2013.

Computer: Also called processor, is an electronic device designed to accept data, perform prescribed mathematical and logical operations at high speed, and display the results of these operations.

Study Habit: Refers to the routine established by students in order to learn more about topics taken up in school. In this study, the term refers to the time students spend doing assigned projects and activities, rereading books and notes, and studying lessons in advance, done on a scheduled, regular and planned basis.

Age: Refers to the length of time during which a being or thing has existed; operationally, the age of the respondent is counted by his/her latest birthday.

Educational Attainment: Refers to the highest educational degree acquired by a person. In this study, it is the highest educational degree acquired by the parents.

Family Income: Refers to the amount of money gained by the family by wage.

Gender: Refers to a range of physical, mental and behavioral characteristics distinguishing between masculinity and femininity. The term may refer to sex.

Occupation: A regular activity performed for payment, that occupies one's time. It refers to how the subjects' parents earn a living.

Self-Efficacy: Is the measure of one's own ability to complete tasks and reach goals. In this study, this refers to the teacher's ability to successfully impart knowledge and skills to students within a prescribed period.

Technology Utilization: This refers to the respondents' amount of technology consumption in day to day activities. One specific type of technology utilization is the use of computers.

Knowledge of the subject: This refers to the teacher's depth of understanding and ability to think in subject-related pedagogical knowledge, as well as content knowledge.

Teaching Ability: As used in this study is the quality of a person for being able to teach and impart knowledge and skills to another, especially the physical, mental, financial, or legal power to accomplish something.

Management of Learning: Is a term used by teachers to describe the process of ensuring that classroom lessons run smoothly despite disruptive behavior by students and that students learn the skills and subjects indicated in the goals and objectives despite certain difficulties.

Professional Competence: Is a standardized requirement for an individual to properly perform a specific job. It encompasses a combination of knowledge, skills and behavior utilized to improve performance. In this study, professional competence refers to the teacher's state or quality of being adequately or well qualified, having the ability to perform his/her role as a teacher.

Teaching for Independent Learning: Independent learning is a process, a method and a philosophy of education whereby a learner acquires knowledge by his or her own efforts and develops the ability for enquiry and critical evaluation. Teaching for Independent Learning promotes independent learning we are encouraging and enabling our students to become self-directed in their learning experiences and to have more autonomy and control over their learning.

Evaluation: Is the evaluation process of characterizing and appraising some aspect/s of an educational process.

Commitment: Refers to an agreement or pledge to do something in the future. In this context, commitment refers to the teacher's personal resolve to perform his/her duty as a teacher.

Personality traits: Are the specific traits which distinguish qualities or characteristics of a person, particularly, the readiness to think or act in a similar fashion in response to a variety of different stimuli or situations.

Interpersonal Relationships: Is an association between two or more people that may range in duration from brief to enduring. This association may be based on inference, love, solidarity, regular business interactions, or some other type of social commitment. In this study, this refers to the teacher's relationship and interaction with educational stakeholders.

Computer Competencies: Referto accomplishing simple tasks with a computer by using appropriate programs and features such as email, internet browsing, interaction with others via the internet, creating and editing documents, spreadsheets and slide shows.

Basic Computer Applications: Are the simplest skills and knowledge a person needs to know in order to make use of the computer. These applications include the Microsoft office, internet browsers and basic windows functions.

Teaching Productivity Tools: Can be software that help teachers increase their productivity. A few examples might be project management software, to do lists, cost management software, classroom monitoring software, print manager software and so on.

Cultural Diversity: Is the quality of diverse or different cultures, as opposed to monoculture, as in the global monoculture, or a homogenization of cultures, akin to cultural decay. The phrase cultural diversity can also refer to having different cultures respect each other's differences.

Higher Order Thinking Skills: Is a concept of Education reform based on learning taxonomies such as Bloom's Taxonomy. These types of learning require more cognitive processing than others, but also have more generalized benefits.

2. REVIEW OF RELATED LITERATURE

Technology has changed the way classroom instructions are handled today. Teaching strategies have undergone a paradigm shift from education's traditional ways to the most recent ones. The teacher's role has also changed from being the sole source of information to being the facilitator of learning. Students' role has also changed from being receivers of spoon-fed information to being discovers of learning.

These changes had been proposed by the earliest philosophers, one of whom was Heraclitus who said that education has nothing to do with filling a pail, rather it has everything to do with igniting a flame. Another very similar quote by Plutarch says, "The mind is not a vessel to be filled, but a fire to be kindled."

These philosophers have seen the importance of students' active role in the teaching-learning process. However, education all over the world has not really shifted from its tradition until the early 20th century with John Dewey's learning by doing.

On Teaching Effectiveness:

Different scholars and even ordinary people have different ideas of a good and an effective teacher. This portion of Chapter two will specifically deal with the traits of an effective teacher and the relationship of communication technology to their daily classroom dealings.

A well-known psycho-lexical study reveals that there are 17,953 words in an unabridged English dictionary describing personality characteristics (Allport and Odbert, 1936). Individuals involved in teacher training, hiring, and mentoring are beneficiaries of studies that document the personality traits that correlate with teacher effectiveness. These individuals are engaged in significant work. An awareness of the characteristics that correlate with and contribute to effective teaching should be nurtured in training and mentoring as well as recognized in hiring. Concerning employment, an implication of this study is the use of personality assessment instruments like the M.M.P.I. (Minnesota Multiphasic Personality Inventory) as part of the employment process.

"All teachers do good things some of the time, and all good teachers do bad things some of the time. The differences among teachers lie not only in the proportions of the good and the bad, but also in their awareness of the effects of what they are doing and their readiness to share this awareness with their students." (Smith, 1995)

Being a good teacher does not necessarily mean that he or she is always doing good all the time. More often, good teachers do mistakes also. The quote above by Smith shows us that good teachers commit mistakes just like most of the other teachers. The only difference is that good teachers never cease to try doing things to improve his or her teaching and to avoid committing the same mistakes all the time. Smith also suggests that learning is a consequence of experience(p.588). He argues that education and therefore teaching, should be focused on the creation of 'appropriately nourishing experiences so that learning comes about naturally and inevitably'(p.589). He states that schools should focus less on 'talking about learning and teaching' and 'more about doing' (p.589).

Alton-Lee (2003) has provided ten clearly defined and research-supported characteristics of quality teaching.

Lee's ten point model covers the following areas:1) A focus on student achievement; 2) Pedagogical practices that create caring, inclusive and cohesive learning communities;3) Effective links between school and the cultural context of the school; 4) Quality teaching is responsive to student learning processes;5) Learning opportunities are effective and sufficient;6) Multiple tasks and contexts support learning cycles;7) Curriculum goals are effectively aligned; 8) Pedagogy scaffolds feedback on students' task engagement'; 9)Pedagogy promotes learning orientations, student self-regulation, metacognitive strategies and thoughtful student discourse; 10) Teachers and students engage constructively in goal-oriented assessment.(Alton-Lee, 2003: vi-x)

Philip Gurney described an effective teacher in his work titled "Five Factors For Effective Teaching." The author enumerated the following factors for effective teaching: 1) Teacher knowledge, enthusiasm and responsibility for learning; 2)Classroom activities that encourage learning; 3)Assessment activities that encourage learning through experience; 4)Effective feedback that establishes the learning processes in the classroom; 5) Effective interaction between the teacher and the students, creating an environment that respects, encourages and stimulates learning through experience.

Generally, most people involved in education are aware that the Philippines needs good teachers to provide great teaching in a good learning environment. It is therefore important to find out the characteristics of a good teacher for us to set a standard in developing future teachers. With this in mind, we also need to know the characteristics of a good teaching.

This is very important in order for us to have an objective view of good teaching. Moreover, the way we qualify good teaching is very complicated. First, we need to agree on which point of view we are looking, and what lens should we use in order to come up with the right magnification of good teaching. Lastly, we need a good environment that is conducive for effective teaching and learning.

Experienced teachers would have different biases on what good teaching really is. The same is true when it comes to defining a good learning environment and, of course, a good teacher.

To address how technology can enhance the quality of learning for all students, researchers in SRI's Center for Technology in Learning evaluate large-scale educational innovations and design assessments to enhance teaching and learning.

Among these researches is a descriptive research titled Effects of Technology on Classrooms and Students, which yielded relevant results. The research had found out that, indeed, technology has positive effects on student performance (SRI International, 2000). Among these effects are: Change in Student and Teacher Roles, Increased Motivation and Self Esteem, Technical Skills, Accomplishment of More Complex Tasks, More Collaboration with Peers, Increased Use of Outside Resources, Improved Design Skills/Attention to Audience.

There are many theories about reflective practice and thinkers like Baird (1991), Day (1999a & b), McMahon (1999) and Cole and Knowles (2000)provide specific direction for critical self-reflection. Day (1999a) argues that 'teaching is more than a craft', suggesting it is an 'educational science and a pedagogical art' (p.22). Day (1999b) also suggests a model for reflective professionalism that includes the following key words: 'Learning, Participation, Collaboration, Co-operation, Activism' (p.228). These are ideas that effective teachers should keep as touchstones for their practice.

In taking on the reflective role, teachers can enjoy the process of teaching by sharing their knowledge through the creation of a reflective classroom. In such an environment the knowledge is shared; students and teachers all become learners, discovering the world of the subject. The teacher that is willing to share his knowledge unconditionally will be stepping towards the effective classroom. The passion that a teacher has for his subject will be creating a world that moves beyond the ritual of classroom activities.

Ultimately, Akiri and Ugborugbo revealed in their study that effective teachers produced better performing students. However, the observed differences in students' performance were statistically not significant. This could be due to the influence of student and school environment related factors which were not included in this study. It was concluded that teachers' effect is not the only determinant on students' academic achievement (Akiri and Ugborugbo (2009).

Teaching Effectiveness and Computers in the Classroom:

Teachers need to adjust their thinking about the nature of teaching; the classroom environment should mirror the teacher's reflective practices that would be central to the learning environment.

Teachers need to use a variety of teaching activities in their classrooms, and that variety should include technology whenever appropriate. Technology can be used not only as an information management tool, but also as a means of reaching students of diverse backgrounds (Sianjina,2000). Use of technology can help teachers relate to today's students who are very media aware, prompt new approaches to curriculum, and encourage developments in teaching skills (Schwarz, 2000). It can also assist teachers in helping students make connections with a worldwide community (Davidson, 2000).

Current research has indicated that Information and Communications Technology assists in transforming a teaching environment into a learner-centered one (Castro Sánchez and Alemán 2011). Since learners are actively involved in the learning processes in ICT classrooms, they are authorized by the teacher to make decisions, plans, and so forth (Lu, Hou and Huang 2010). ICT therefore provides both learners and instructors with more educational affordances and possibilities.

Lowther et al. (2008) have stated that there are three important characteristics are needed to develop good quality teaching and learning with ICT: autonomy, capability, and creativity.

Autonomy means that students take control of their learning through their use of ICT. In this way, they become more capable of working by themselves and with others. Teachers can also authorize students to complete certain tasks with peers or in groups. Through collaborative learning with ICT, the students have more opportunity to build the new knowledge onto their background knowledge, and become more confident to take risks and learn from their mistakes.

Further, Serhan (2009) concluded that ICT fosters autonomy by allowing educators to create their own material, thus providing more control over course content than is possible in a traditional classroom setting. With regard to capability, once students are more confident in learning processes, they can develop the capability to apply and transfer knowledge while using new technology with efficiency and effectiveness.

The Use of Computers in Classrooms Today:

With the coming of modern technology, especially the computer, classroom instruction has been changed forever. Students can now perform different tasks and take up an active role in learning with the aid of information technology. And up to this day, researchers have been finding out the many benefits of modern technology to both students and teachers.

Technology has been integrated in classroom instruction as a tool to promote and extend student learning on a daily basis. Technology use allows students to create, problem solve, research, collaborate, and interact globally. Students that use technology as a tool and or a support for communicating with others are in an active role rather than the passive role of recipient of information by a teacher or reading textbooks. Students have the ability to learn and express themselves in their individual learning style too.

Jonassen (2000) also developed the idea of mindtools: computer based tools and learning environments that have been "adapted or developed to function as intellectual partners with the learner in order to engage and facilitate critical thinking and higher-order learning" (p. 11). According to him, the role of a mind tool is to extend the learner's cognitive functioning during the learning process, and to engage the learner in operations while constructing knowledge that they would not have been able to accomplish otherwise. "Mind tools enable learners to become critical thinkers. When using cognitive tools, learners engage in knowledge construction rather than knowledge reproduction" (Jonassen,2000,p.18). By using commonly available software, learners employ technology to both construct and represent knowledge.

When technology is introduced into a classroom, things change. Instruction through computers give students more control over their learning environments and access to a wider range of materials to use in the learning process. For example, students are too confused or embarrassed to ask questions because they don't want to show their ignorance but with individualized computer instruction, students can always immediately request help if something is unclear. Computers in classroom help to make it more interactive.

SRI International has also aided a professor from the University of Southern California (USC), William G. Tierney together with his team of researchers, to help students in urban areas engage meaningfully with the college application process through a series of games designed to cultivate college knowledge. Tierney and his colleagues have developed a Facebook application of what was originally a counselling card game: "Mission: Admission." This is only one way that technology could make learning both interesting and effective.

Today, computer education is a part of school and college curricula. Considering the wide range of applications of computer technology, it is necessary for each one of us to computer-friendly. Considering the advantages of Internet technology, it is important for each of us to gain basic knowledge of Internet access and web research. We live in a technology-age and hence, it is important for us to be abreast with the latest inventions in the field. With education, we acquire knowledge of the functioning and use of different pieces of technology. And with the application of technology, we can educate ourselves better. This is the influence technology and education have on each other. Education boosts use of technology and technology aids education (Oak, 2012).

Authentic, challenging tasks tend to be multidisciplinary in nature. These authentic tasks are complex, permitting students to take a more active role in defining their own learning goals and regulating their own learning (Means and Olson, 1995).

Teachers can draw on technology applications to simulate real-world environments and create actual environments for experimentation, so that students can carry out authentic tasks as real workers would, explore new terrains, meet people of different cultures, and use a variety of tools to gather information and solve problems.

Working on "authentic tasks," which Brown, Collins, and Duguid (1989) define simply as the ordinary practices of the culture, engages students in sustained exploration and provides multiple opportunities to reflect on the decisions made in trying to address the problem. With simulations, students can get involved with a problem, often through visual media, which provide integrated contexts and help students comprehend new ideas more easily.

To explore the implications on multimedia enabled education, Kim and Chang's study on "Effects of Computer Use on Academic Performance" revealed that computer use for schoolwork had significantly positive effect on achievement for overall students. (Kim and Chang:2007)

Computer technology aids teachers in performing their roles as the guardian for learning in the classroom environment. If the teacher goes in unprepared, unwilling to share, unfocused on the process of developing a context that will encourage

and stimulate an interest and a thirst for further knowledge then that teaching is shirking the responsibility of being a teacher. Teaching is far more than simply transferring information. It is the engaging of minds to seek out answers. Strong, silver and Robinson (1995) put forward the acronym SCORE to suggest a model of student engagement. I would suggest that this model should be applied to teachers first:

S: The Success of mastery of the subject that you teach.

C: The Curiosity that every teacher should have entrenched in their teaching. A teacher who is not curious has lost a critical portion of the passion for learning.

O: Originality – a teacher who is passionate about the teaching process will be creative; will be constantly seeking new ways of engaging and challenging students.

R: Relationships are central to the effective classroom and teachers are crucial in the nurturing of opportunities for students to engage with subjects that at senior levels can lead to a life-long interaction with the subject.

E: To maintain this process the teacher needs Energy. This is something that schools do not always provide, and teachers in general need the time to reflect; to re-energise and to regenerate their focus on the learning process. It is an essential ingredient in the effective classroom that is too often ignored. (SCORE acronym adapted from Strong et al., 1995: 9-11).

Indeed, the computer technology is needed for teachers to be effective. Computers provide a teaching environment that meets students' needs for interactive and cooperative learning. The teaching environment may be the same but the attitudes that each cohort brings to a classroom will always influence the outcome. A teacher must be able to identify the ebbs and flows of each class and work with the students to create the learning environment. Teachers need to be prepared to test what is going on in the class, for example, through feedback questionnaires on what they doing.

The importance of technology in education cannot be stressed enough. The introduction of technology in the educational field has made the process of learning and knowledge sharing, a more interactive and pleasurable experience. When students see their teacher incorporating new technology and trying new things, they become more engaged in the process. Technology allows students to see the whole world as a resource with themselves being in charge of their destiny. It also benefits students because they have choices and opportunities to explore and share information to a greater extent than available in a traditional classroom.

However, most teaching practices do not really make much of technology, especially here in the Philippines where computer units are either scarce or seldom used.

Piele (1989) points out that although microcomputers have found their way into schools in large numbers, they have failed to transform schools because they are typically set off in a computer "lab," usually supervised by someone other than the classroom teacher. Thus, most teachers can and do "ignore them altogether."

Some Negative Views on the Use of Computers in the Classroom:

People expect technology, especially computers, to make teachers' jobs easier. Experience has shown these early predictions to be naive. Teachers are nearly unanimous in concluding that, in the early stages of technology implementation, at least, their job becomes harder. The technical demands posed by technology use are just the tip of the iceberg. Teachers must be able to select, adapt, or design technology-enhanced materials that meet the needs of their particular students (Means and Olson, 1995).

It is possible that multimedia technology can help students successfully learn. However, it is important to realize that failure to present multimedia technology in an appropriate form can lead to negative results. The perception of display on a multimedia application is of significant importance in terms of transfer learning. In fact, too much multimedia stimulation can interfere with the deeper cognitive processing that is critical to learning (Mayer, Griffith, Jurkowitz, & Rothman, 2008).

When teachers first began to use computers in a classroom setting, schools evaluate whether the use of educational technology had a significant and consistent influence on student achievement. When people hear the word "technology", computers are the first thing people think. However, there are many different types of technology other than computers that can be used to improve student learning. There are different kinds of content and serve different purposes in the classroom. Such examples as word processing programs that encourage communication and writing skills; spread sheet

software promotes mathematics; database software promotes organizational skills; modeling software enhances the application of science skills (Using Technology to Improve Achievement, 1999). It is without question that the introduction of a new medium of instruction like technology would have an enormous impact on the traditional classroom.

With technology being in its infancy at this present school, few teachers are proficient enough to use technology in meaningful and appropriate ways (Becker, 2000). The lack of appropriate technology use among the students might be another reason that students' attendance and grades saw no improvements.

A study by Herzig (2003) laid results which indicated that there is an extremely low means of technology use among the teachers. Technology training is needed for the teachers to apply technology as a tool for their curriculum. Herzig also described the low technology use found in her survey results as a statement on how little teachers were given enough preparation to embrace technology. The word processor is the only application used at high levels for teacher use and student use.

Although technology is not the answer for all educational ills, technology is an essential tool for teaching (OTA, 1995). To use technology as an effective instructional tool, training and time is needed for teachers to infuse technology into their curriculum.

Advances in cognitive psychology have sharpened our understanding of the nature of skilled intellectual performance and provide a basis for designing environments conducive to learning. New strategies of teaching brought about reform efforts to move teaching instruction from rote learning to problem solving, concept development, and critical thinking. This new instruction philosophy is based on theory of knowledge and learning which today is called ''constructivism'' (Sandholtz et al., 1997).

As a counterpoint, some scholars argue that multimedia and the information technology are simply the latest in a long line of innovations that have been advertised naively as the instrument for transforming schools. What happens instead, these critics assert, is that the technology is being adapted to traditional school structures and teaching styles if it is sufficiently flexible. It is discarded if it cannot be so adapted (Cohen, 1988; Cuban, 1986).

Cohen further stated that uses of instructional technology that break the mold of conventional instruction are most likely to be adopted at the margins, that is, in advanced placement courses, special education, or vocational training. The central instructional program remains much as it was 50 years ago, untouched by the technological revolution going on around it.

Piele (1989) points out that although microcomputers have found their way into schools in large numbers, they have failed to transform schools because they are typically set off in a computer "lab," usually supervised by someone other than the classroom teacher. Thus, most teachers can and do "ignore them altogether" (p. 95).

When using technology, intervention in students' work at an early stage can be helpful, but it also can thwart students, short-circuiting their own construction of knowledge (Newman, 1990; 1992). A challenge related to the collaborative learning approach used in many technology-supported projects is finding a balance between group and individual assessments. The essence of a collaborative project suggests an emphasis on evaluating group performance, but teachers also need to tease out enough evidence of individual performance to be able to identify any students who have become lost in the dynamics of the group.

Although an argument can be made for including technology in schooling for its own sake, many policy-makers and community members want evidence of the effects of technology on student learning to support technology investments.

Several programs had been designed in different countries integrating technology in the classrooms. Some studies have found positive effects of having students develop their own curriculum materials using hypermedia. When asked to draw "concept maps" of the Enlightenment, 11thgrade history students who had studied the period using a hypermedia corpus called ACCESS (American Culture in Context: Enrichment for Secondary Schools) had more information within their maps and used more abstract concepts to organize the information they had than did their peers who had not used the hypermedia materials (Spoehr, 1992). Similarly, Lehrer found that when ninth-grade students were retested a year after they had studied the Civil War, those who had developed hypermedia presentations had a more realistic understanding of the role of the historian, recalled more Civil War facts, and had more elaborated concepts (Lehrer, Erickson, and Connell, 1992).

Computers have indeed become a powerful medium wherein learning could take place in a more motivating and productive manner. New, more powerful computer tools are constantly emerging. If computers become standard fixtures in schools, it will be because they have proven to be useful tools for teachers. Few studies have examined how social studies teachers use computers to carry out their own work (Ehman and Glenn 1987). Assuming computer use in social studies will grow, it is likely that teachers in the field will make increasing use of general tool software, including word processors, databases, and spread sheets. Moreover, new tools with special relevance to social studies are being developed, such as Time Liner (Tom Snyder Productions), which allows teachers and students to generate historical timelines. Software companies will continue to develop a wide range of new data analysis and data representation tools that fit the content of social studies education.

With the use of computers, there is more focus on development of thinking skills. The national movement toward the teaching of thinking is coincident with the emergence of computer tools, such as databases that support development of thinking skills. Dede (1987) expects that more powerful "cognition enhancers" will be developed, which will increasingly shift students' foci toward higher-level thinking tasks required for solving ill-structured problems. Use of these computer tools will require a substantial shift in the instructional process, a shift not yet evidenced in social studies classrooms generally (Ehman and Glenn 1987).

The already apparent trend toward greater integration of computer software into the social studies curriculum will likely continue and deepen. That deepening will take software developers beyond simply targeting discrete social studies topics and facts and will result in more sophisticated computer environments in which students can learn and apply concepts and skills. This may include intelligent coaching systems, which monitor and advise students as they move through simulated social "microworlds"(Dede,1987). It has also been predicted that gradual expansion of interactive video will develop.

Information technology is indeed a versatile and valuable tool for teaching and learning, aside from changing our way of life. Technology in the classroom is both beneficial to students and teachers. It creates new ways of obtaining and presenting information and gives students new ways of analyzing and understanding the world around them. There are some drawbacks in technology too, depending on how it is consumed. Aside from the possible negative effects of computers to the way youth live today, there are also several problems which hinder students and teachers from gaining the greatest benefits out of this technological gift.

This review of existing literature makes it apparent that technological integration in the classroom involves a process, not a final product. To achieve successful integration of technology requires an effort from three sides: teachers, students, and school administrators.

3. RESEARCH METHODOLOGY

This chapter discusses the methods and procedures utilized in conducting the study. It includes the research design, Locale, respondents of the study, sample size, the research instruments, data gathering procedure and the data treatment and analysis.

Research Design:

This study made use of the descriptive research design utilizing Survey Questionnaire. This design is most appropriate in describing the effects of computer literacy and utilization of teachers and students to students' academic performance.

This study likewise made use of qualitative research design such as Focus Group Discussion and Key Informant Interview.

A Focus Group Discussion shall attempt to explore the frames, reference and language that respondents use in approaching a given topic area (Coyle, et. al.: 1991).

Individual interviews, like the FGD, are characterized by extensive probing and open-ended questions, but they are conducted on a one-on-one basis between the respondent and a highly skilled interviewer, AIDSCAP: 1994).

To achieve credibility of the research, "triangulation" was used by involving multiple data collection procedures as follows:

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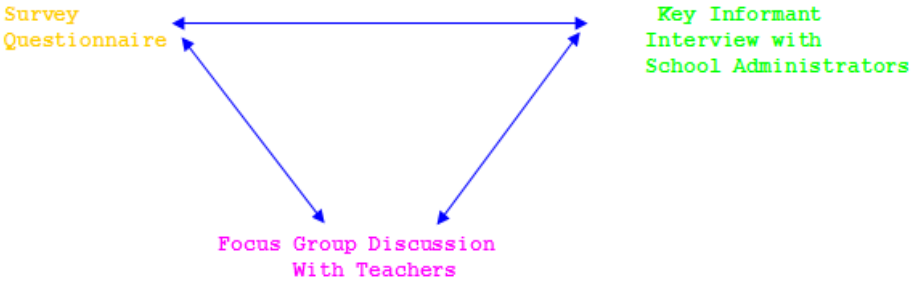

Triangulation is a technique of using a variety of instruments to validate qualitative data (Frankel and Wallen, 2003).

Locale of the Study

The research was conducted in selected secondary schools in Southern Negros, Division of Negros Occidental in Candoni, Cauayan, Ilog, Sipalay and Hinoba-an. (Figure 2)

Figure 2: Map of Negros showing the Locale of the study

Respondents of the Study:

The respondents of the study consisted of teachers and students of public and private secondary schools in District VI, Division of Negros Occidental located in Candoni, Cauayan, Ilog, Sipalay and Hinoba-an during the School Year 2013-2014. The list of teachers and students were taken from the individual principals of the respective schools in the District.

Sample Size and Sampling Technique:

Since the locale of the study included public and private secondary schools in district VI with thousands of students, Simple random sampling was used in determining the respondents of the study. The selection of sample size was done using the Slovin's formula and computed as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size

N = population

e = margin of error (.05)

This study further utilized quota sampling in the determination of the number of respondents per school. Specifically, 7% was set to determine the number of respondents.

A total of Ninety seven (97)from a population of 128 teachers from the public and private schools were identified as the sample size. Table 1 presents the distribution.

Table 1: Distribution of Teacher Respondents from Public and Private Schools in Southern Negros, Division of Negros Occidental

Municipality/ City	School	Teachers	
		N	n
Candoni	Quirico G. Manzano Memorial NHS	15	11
	Our Lady of Lourdes High School	10	7
Cauayan	Tuyom National High School	23	18
	Isio Private Academy	11	8
Hinoba-an	Bulawangan National High School	10	8
	St. Michael Academy	9	7
Ilog	Tabu National High School	17	13
	Immaculate Concepcion Academy	9	7
Sipalay	Gil Montilla National High School	15	11
	Holy Rosary Academy	9	7
Total		**128**	**97**

Out of 6,230 students enrolled in public and private schools in Southern Negros, 436 students served as the sample size. This is 7% of the total population. Table 2 presents the distribution of student respondents.

Table 2: Distribution of Student Respondents according to Secondary Level

Municipality/ City	School	Students	
		N	n
Candoni	Quirico G. Manzano Memorial NHS	594	42
	Our Lady of Lourdes High School	475	33
Cauayan	Tuyom National High School	821	57
	Isio Private Academy	429	30
Hinoba-an	Bulawangan National High School	1023	72
	St. Michael Academy	425	30
Ilog	Tabu National High School	518	36
	Immaculate Concepcion Academy	715	50
Sipalay	Gil Montilla National High School	943	66
	Holy Rosary Academy	287	20
Total		**6230**	**436**

Research Instrument:

There are two sets of research instruments utilized to gather the data needed for this study. The first set composed three types namely: the Computer Self-efficacy Scale for Students (Appendix A), Technology Utilization of Students (Appendix B) and Teaching Effectiveness of Teachers rated by the Students (Appendix C).

The first part of the Computer Self efficacy Scale for Students focuses on the subject-respondent's personal data. Part 2 solicit their basic background information regarding their experience with computers.

Part 3 of the questionnaire deals with the extent of students' computer knowledge and skills from basic to more advanced features of computers. This questionnaire helped students rate their confidence using different applications and aspects of computers.

The questionnaire on Technology Utilization of Students aims to examine students' degree of technology utilization and their knowledge on basic and most popular computer applications.

Part 2 of the questionnaire asked students about the level of their awareness on different issues faced by internet and computer users of today.

Part 3 of the questionnaire asks students about their knowledge and skills with accessing data from the internet and using the medium for different purposes using different websites and computer applications.

The instrument on Teaching Effectiveness specifically deals with the most popular use of computers and the internet for children which is playing games, offline or online.

Part 1 of the questionnaire allows students to rate their teachers with regards to the knowledge of teachers about the subjects they teach and their teaching abilities.

Part 2 of the questionnaire allows students to rate their teachers with regards to the teacher's classroom management skills and general professional competence.

Part 3 of the questionnaire allows students to evaluate the different teaching strategies used by teachers in order to motivate and evaluate student learning.

Part 4 of the questionnaire allows students to evaluate their teacher's personality traits and commitment to the teaching profession.

Part 5 of the questionnaire lets students rate their teacher's interpersonal relationship with students and with other teachers.

The Second set of questionnaires deal with teachers' personal and basic professional profile.

Part 1 of the questionnaire had been further divided into four sections. **Part 2.a** asks teachers to rate their knowledge and skills on basic computer applications. **Part 2.b** asks them to rate their skills in using appropriate office and teaching productivity tools. **Part 2.c** lets teachers rate their teaching preparations and performance to address learning, social and cultural diversity. And lastly, **Part 2.d** lets teachers rate their actual utilization of computer technology in their classroom to develop students' higher order thinking skills and creativity.

The items in the Computer Self-efficacy Scale for Students, Technology Utilization of Students and Teaching Effectiveness of Teachers were given five alternative choices for the respondents to choose from which are as follows:

Code	Verbal Description
1	Very low
2	Low
3	Average
4	High
5	Very High

The mean scores were interpreted using the following guide:

Mean Score Range	Verbal Description
1.00– 1.80	Very Low
1.81- 2.60	Low
2.61- 3.40	Average
3.41- 4.20	High
4.21- 5.00	Very High

Validity of the Instrument:

The researcher made use of content validation to ascertain the validity of the whole part of the questionnaire-checklist. This essentially involves a systematic examination of the instrument content to determine whether it covered a representative sample of the behavior domain to be measured (David, 2005). According to Calmorin and Calmorin (1999), content validity requires largely a selected group of experts to validate the content of the questionnaire on the basis of the foregoing questions.

In this study, the experts in line with educational management were requested to scrutinize the research instruments to determine whether the questions measure the behavior domain being considered. Based on their suggestions and corrections, the researcher developed the final questionnaire. The mean ratings obtained from the four jurors was computed and the result of 3.89 signify that the instrument was Excellent.

Reliability of the Instrument:

A research instrument is reliable if there is consistency, stability and dependability of the data, which is a reliable measuring device, is one which, if used for the second time, will yield the same results as it did first time (David, 2002).

The researcher made use of the test-retest reliability technique to establish the reliability of the data-gathering instrument.

Twenty students from Quirico G. Manzano Memorial National High School were chosen to be the dry-run respondents. The results of the test-retest were correlated using the Cronbach's Alpha Test, a test for reliability. The result of the reliability analysis is shown in Table 3.

Table 3: Cronbach's Alpha Reliability Analysis on the Instruments for Students

INDICATORS	CRONBACH'S ALPHA	INTERPRETATION
A. Self-Efficacy	0.878	Reliable
B. Technology Utilization	0.884	Reliable
C. Teachers' effectiveness	0.905	Reliable

The table above shows the Cronbach's Alpha Analysis on the Instruments used for students. The table reveals that the reliable coefficient for the self-efficacy is equal to 0.878 which was interpreted as reliable.

Further, table reveals that the reliable coefficient for the technology utilization is equal to 0.884 which was also interpreted as reliable.

Moreover, the same table shows that the reliable coefficient for the teachers' effectiveness is equal to 0.905 which was interpreted as reliable.

Similarly, Reliability analysis was done on the instruments for teacher. Result of the Cronbach's Alpha tested reliable on the three areas such as self-efficacy, technology utilization and teacher's competence with reliability coefficient of 0.894, 0.976 and 0.967 respectively. Table 4 presents the result.

Table 4: Cronbach's Alpha Reliability Analysis on the Instruments Used for Teachers

INDICATORS	CRONBACH'S ALPHA	INTERPRETATION
A. Self-Efficacy	0.894	Reliable
B. Technology Utilization	0.976	Reliable
C. Teachers' competence	0.967	Reliable

Data Gathering Procedure:

The data-gathering instruments were reproduced and distributed to the subject-respondents. Students from the sixth District of Southern Negros of the Division of Negros Occidental from various classes were asked to fill-out the questionnaire with the approval and assistance of their respective advisers.

The researcher explained the purpose of the study and the manner of accomplishing the questionnaire to the subject-respondents. The conduct of the study lasted for one month. After the gathering of data, the researcher converted the responses of the subject-respondents into numerical data.

After the collection of the data, the researcher then made a summary, computed for the mean scores, standard deviations and z- values and analyzed the results.

Data Analyses:

The data that were gathered from the study were collated, organized, tabulated, and subjected to the following statistical treatment. In the analysis of data, different statistical tools were employed according to the nature of the specific problems that were set forth in this study.

The descriptive statistics, such as frequency counts, percentage were employed to describe basic objectives number 1 and 2.

The mean was used to answer objectives number 3 to 6. The Mann-Whitney U-test was utilized to answer objectives number 7 and 8. Similarly the Mann-Whitney U-test and Kruskall-Wallis H Test was employed to answer problem number 9.

To determine significant relationship between the teachers and students computer literacy and students' academic performance the Multiple Linear Regression was used. To determine the significant relationship between computer competencies of teachers and their teaching effectiveness the Multivariate analysis of Variance (MANOVA) was employed.

To determine the teachers' computer competencies and students' academic performance, the Multiple Linear Regression was used.

To determine the significant relationship between teaching effectiveness and students' academic performance, the Multiple Linear Regression was adopted.

4. PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents the analyses and interpretation of the data collected in this study. The data pertain to the self-efficacy and computer utilization of students as perceived by the students and the self-efficacy and computer utilization of teachers as perceived by themselves and by their students. The baseline and statistical data are presented in the tables that follow.

Socio-Demographic Characteristics of Student Respondents:

Table 5 shows the students' socio demographic profile when grouped according to sex, year level and educational attainment of parents.

Sex. As shown in Table 5, data show that there are more female respondents than male, female being 294 and male being 142.

Year Level. There are 124 respondents from Grade 7 comprising 28.4%; 105 students from Grade 8 comprising 24.1%, 100 students from Third Year comprising 22.9% and 107 students from Fourth Year comprising 24.5%.

Table 5: Demographic Profile of Student Respondents n = 436

Profile	Frequency	Percentage
Sex		
Male	142	32.6
Female	294	67.4
Year Level		
Grade 7	124	28.4
Grade 8	105	24.1
Third Year	100	22.9
Fourth Year	107	24.5
Educational Attainment		
Father		
Elementary Level	54	12.4
Elementary Graduate	30	6.9
Secondary Level	57	13.1
Secondary Graduates	118	27.1
College Level	57	13.1
College Graduates	110	25.2
No Knowledge	10	2.3
Mother		
Elementary Level	46	10.6
Elementary Graduate	26	6.0

Secondary Level	66	15.1
Secondary Graduates	117	26.8
College Level	44	10.1
College Graduates	131	30.0
No Knowledge	6	1.4
TOTAL	**436**	**100.0**

Educational Attainment of Father: Similarly, table 5 shows that there are 54 respondents whose fathers only reached elementary level (12.4%) while there are 30 students whose fathers have graduated from the elementary (6.9%). There are 57 students whose fathers had reached only up to secondary level (13.1%) while there are 118 students whose fathers have graduated from high school (27.1%). Only 57 students have fathers who reached college level, comprising 13.1%. Likewise, there are 110 students whose fathers finished college. However, data reveal that there are 10 students who have no knowledge on their fathers' educational attainment.

Generally, majority of the student respondents have fathers who have graduated from high school and finished college degrees.

Educational Attainment of Mother: In terms of the educational attainment of the respondents' mothers. The table shows that there are 46 students whose mothers are only up to the elementary level (10.6%). There are 26 whose mothers have graduated from the elementary school (6%) while 66 students have mothers who have reached only secondary level (15.1%).

There are 117 students whose mothers have graduated from high school, comprising 26.8% and 44 students have mothers who have reached college level only (10.1%). On the other hand, there are 131 students whose mothers have graduated from college (30%) while only 6% do not have any knowledge of their mothers' educational attainment. The data show that most student respondents have mothers who have graduated from college.

Demographic Profile of Teacher Respondents:

Table 6 shows the demographic profile of teachers when grouped according to age, sex, civil status, educational attainment, length of service, number of subjects or workloads and monthly income.

Age: The table shows that there are 29 teachers who belong to the age bracket of 21-30(29.9%). Twenty nine teachers (29.9%) have ages between 31-40 years old while 19 teachers (19.6%) belong to the age bracket of 41-50. There are only 15 teachers who belong to the age bracket of 51-60, comprising 15.5% of the total teacher respondents.

Sex: There are only 29 male teacher respondents, comprising 29.9% while the other 68 teachers are female which comprise the 70.1% of the total respondents. It is implied by this data that there are more female teacher respondents in this study than there are males.

Civil Status: The same table shows that there are 38 or (39.2%) teacher respondents who are single, while the other 58 teachers (59.8%) are already married.

Table 6: Demographic Profile of Teacher Respondents n = 97

Profile	Frequency	Percentage
Age (years)		
21 to 30	29	29.9
31 to 40	29	29.9
41 to 50	19	19.6
51 to 60	15	15.5
Sex		
Male	29	29.9
Female	68	70.1
Civil Status		
Single	38	39.2
Married	58	59.8
Educational Attainment		

Bachelor's Graduate	83	85.6
With MA/MS units	6	6.2
Full-fledged MA/MS	8	8.2
Length of Service (years)		
1 to 10	55	56.7
11 to 20	15	15.5
21 to 30	18	18.6
31 and above	4	4.1
Number of Subject/Work Load		
1	73	75.3
2	19	19.6
3	4	4.1
4	1	1.0
Monthly Income (pesos)		
7,000 and below	39	40.2
7,001 to 14,000	18	18.6
14,001 to 21,000	27	27.8
21,001 and above	13	13.4

Educational Attainment: Majority of the teacher respondents (85.6%) are Bachelor's Degree holders while there were only 6 teachers (6.2) with units in Master's Degree. There are only 8 teachers (8.2%) who are already full-fledged master's degree graduate.

Length of Service: In terms of the length of service of teachers, the table shows that majority of the teachers (56.7%) have served for 1-10 years in teaching. There are 15 of (15.5%) who have served 11-20 years while 18 teachers (18.6%) have served for 21-30 years. Only 4 teachers (4.1%) have served for 31-40 years. This implies that most of the teacher respondents are those who have served less than ten years in teaching. When compared to the data on age, it can be further implied that most of the respondents belong to the youngest age brackets with the least number of years in service.

Number of Subject/Work Load: The same table also shows that 73 teachers or 75.3% have only one subject/work load while 19 teachers or 19.6% have two subject/workloads. There are 4 teachers or 4.1% who have three subject/workloads and only one teacher or 1% who has four subject/workloads. This implies that most of the teacher respondents handle only one subject or work load.

Monthly Income: In terms of the income earned by teachers per month, the data show that there are 39 teachers or 40.2% who earn P 7,000.00 and below per month. There are 18 teachers, or 18.6%, who earn from 7,001 to 14,000. There are 27 teachers or 27.8% who earn from 14,001 to 21,000 while only 13 teachers or 13.4% earn from 21,001 or higher. This simply shows that most of the teacher respondents earn a monthly income of below P7,000.00. This income is significantly lower than the national poverty threshold income of P7,017 set aside by the government in 2009 (National Statistics Coordination Board, 2009).

Computer Literacy of Students and Teachers in terms of Self-Efficacy and Utilization as a Whole and when Grouped According to Private or Public Schools

Self-Efficacy and Computer Utilization of Students:

Information on the Computer Literacy of Students in terms of their Self Efficacy and computer background is presented in Table 7.

Data show that only 50 (30.5%) of private school student respondents have computers in their homes while the other 114 (69.5%) private school student respondents do not have computers at home. Among public school student respondents, only 30 (11%) have computers at home while the other 242 (89%) do not have computers at home. It further reveals that there are more private school students who have computers at home compared to the public school students. Generally, only 80 students or 18.3% of the respondents have computers at home, compared to the 356 students or 81.7% of the respondents who said that they do not have computers at home.

When asked whether students have access to computers outside the school,96 (58.9%) private school student respondents have indicated that they have access while the other 67 students or 41.1% signified that they do not have access to computers outside the school.

On the other hand, among public school student respondents, 113(41.5%)indicated to have access to computers outside the school while the other 159 (58.5%) do not have access. The above table also shows that there are more private school students, in terms of percentage, who have access to computers outside the school compared to the public school students.

Table 7: Literacy of Student Respondents in the Use of Computers n=436

Indicators	Response	Private	Public	As a whole
1. Do you own a computer?	Yes	50 (30.5%)	30 (11.0%)	80 (18.3%)
	No	114 (69.5%)	242(89.0%)	356 (81.7%)
2. Do you have access to a computer when you are not in school?	Yes	96 (58.9%)	113(41.5%)	209 (48.0%)
	No	67 (41.1%)	159(58.5%)	226 (52.0%)
3. How would you describe your experience with computers?	None	0 (0%)	39(14.5%)	39 (9.0%)
	Very Limited	56 (34.1%)	91(33.8%)	147 (33.9%)
	Some Experience	50 (30.5%)	94(34.9%)	144 (33.3%)
	Quite a Little	51 (31.1%)	26 (9.7%)	77 (17.8%)
	Extensive	7 (4.3%)	19 (7.1%)	26 (6.0%)
4. The computer packages (software) used.	WordProcessing	87 (53.4%)	91(33.5%)	178 (40.9%)
	Spreadsheets	62 (37.8%)	41(15.2%)	103 (23.7%)
	Databases	20 (12.2%)	35(12.9%)	55 (12.6%)
	Presentation	110 (67.1)	78(28.7%)	188 (43.1%)
	Desktop publishing	57 (34.8%)	36(13.2%)	343 (78.7%)
	Multimedia	73 (44.5%)	105(38.6%)	178 (40.8%)
5. Have you ever attended a computer training course?	Yes	35 (21.3%)	30 (11.0%)	65 (14.9%)
	No	129 (78.7%)	242(89.0%)	371 (85.1%)

Generally, 209 (48%) of the respondents have access to computers outside the school, compared to the 226 (52%)student respondents who said that they do not have access to computers outside the school. This means that there are more students who do not have computer access outside of their schools and most of them came from public schools.

When asked how they would describe their experience with computers, none from the private school student respondents have no access to computers at all while 56 (34.1%) of them claim to have very limited experience with computers. Fifty (50) students or 30.5% claim to have some experience with computers while Fifty-one (51) students or 31.1% of them say they have quite a little experience with computers while 7 students or 4.3% have an extensive experience with computers.

On the other hand, there were 39 or 14.5% of public school student respondents who say that they have no experience at all with computers. Ninety-one (91) of them or 33.8% say their experience with computers is very limited and Ninety-four (94) or 34.9% say they have some experience with computers. There were still Twenty-six (26) or 9.7% who have quite a little experience with computers while only 19 or 7.1% of the public school respondents have an extensive experience with computers.

In general, most of the students both from the public and private schools in the Southern Negros, division of Negros Occidental have very limited (33.9%) and quite a little experience (33.3%) with computers. Only very small number (6%) claimed that they have extensive experience with computers while there are still those (9%) from the public schools who do not even have any experience at all with computers. This data simply show that students from private schools have better access to computers outside the school compared to students from the public schools.

In terms of the computer packages or programs used by students the table shows that majority used presentations (43.1%), word processing (40.9%) and Multimedia applications (40.8%) as the most widely used by students at school and most of these are found in the desktops at school.

Majority (85.1%) of the students have not yet attended any computer training course and only 14.9% have attended formal training. Together with the lack of access to computers, one factor that might have contributed to their limited experience with computers is the fact that they also lack formal trainings on computers.

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Table 8: Self-efficacy of the Student Respondents n = 436

Indicators	Private		Public		As a whole	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. I can usually deal with most difficulties I encounter when using computers.	2.85	Average	2.54	Low	2.66	Average
2. I seem to have no difficulties with most of the packages I have tried to use.	2.80	Average	2.55	Low	2.65	Average
3. Computers do not frighten me.	3.55	High	3.23	Average	3.35	Average
4. I enjoy working with the computers.	3.97	High	3.66	High	3.70	High
5. I find learning more interesting when computers are used.	4.24	Very High	3.87	High	4.01	High
Grand Mean	**3.48**	**High**	**3.17**	**Average**	**3.29**	**Average**

The table presents information as to literacy of students in the use of computers. Data show that students in the private schools have average skills in dealing with difficulties encountered when using computers (2.85) and its packages than those from the public school showing lower mean scores (2.55).

The same comparison is true when it comes to students' skills in using different program packages where the private school students' average, scored higher than the public school students, fair.

It is worth noting that students from both public and private schools find working with computers enjoyable and interesting.

This table implies that students from private and public schools vary in their self-efficacy levels, with private school students scoring higher than the public school students. However, the increasing trend in their skills, enjoyment and interest in learning has been revealed. This further implies that although their skills are still at the low and average levels, they find computers very enjoyable and that this technology makes learning very interesting. Students' enjoyment with computers corresponds with Binnur's findings that majority of students find computer-based classrooms make lessons enjoyable. His study on Effect of Technology on Motivation in EFL Classrooms also revealed that most students do not find technology in the classroom boring and unnecessary (Binnur, 2009).

Technology Utilization of the Student Respondents:

Table 9 deals with students' utilization of technology. Just like the teachers, the students' computer background is generally at an average level.

The only area where there is a difference between the two groups is the private school students' higher skills in saving files to different folders. This shows that private school students can use windows explorer better than the public school students. But in general, the students in both groups have average computer literacy background. However, they manifest very low exposure to various computer issues.

This table implies that students use technology at an average level but they lack exposure to internet issues, further implying that in their moderate access to the World Wide Web, they are still vulnerable to internet fraud and, worse, crimes.

Table 9: Technology Utilization of the Student Respondents n = 436

Indicators	Private		Public		As a whole	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
I. Computer Literacy Background						
1. Microsoft Word	3.64	High	3.17	Average	3.35	Average
2. Other Microsoft Office Programs (PowerPoint, Excel and Publisher)	3.22	Average	2.78	Average	2.94	Average
3. Playing media files on appropriate viewers or players	3.24	Average	3.10	Average	3.15	Average
4. Printing of documents and photos	3.11	Average	2.68	Average	2.84	Average
5. Saving files on specified folders and flash drives	3.60	High	2.98	Average	3.21	Average
Grand	3.36	Average	2.94	Average	3.10	Average

II. Exposure to different issues						
1. Hackers	1.66	Very Low	1.64	Very Low	1.65	Very Low
2. Spams	1.71	Very Low	1.55	Very Low	1.61	Very Low
3. Plagiarism and Copyrights	1.72	Very Low	1.78	Very Low	1.76	Very Low
4. Cyber-bullying	1.58	Very Low	1.65	Very Low	1.63	Very Low
5. False information	1.79	Very Low	1.69	Very Low	1.73	Very Low
Grand	1.69	Very Low	1.66	Very Low	1.67	Very Low
III. Accessing the Internet						
1. Access programs and softwares	2.93	Average	2.62	Average	2.74	Average
2.Access public websites and search engines	3.13	Average	2.82	Average	2.94	Average
3. Join social networking (Facebook, Myspace, etc.)	3.48	High	3.21	Average	3.31	Average
4. Download and Upload files	3.34	Average	2.94	Average	3.09	Average
5. Chat and E-mail	3.24	Average	2.95	Average	3.06	Average
Grand	**3.22**	**Average**	**2.91**	**Average**	**3.03**	**Average**

Self-Efficacy and Computer Utilization of Secondary School Teachers:

Information on the Computer Literacy of Teachers in terms of their Self Efficacy and computer background is presented in Table 10.

Data show that most teachers from the private schools have some experience (39.5%) and very limited experience with computers (23.7%) leaving only 18.4% with extensive experience.

Similar trend can be seen in public school teachers where most of them only have quite a little (33.3%) and limited experience in computers.

The most commonly used computer packages and softwares used by teachers in both public and private schools include word processing (66.7%), presentations (42.7%), spreadsheets (38.5%) and multimedia (35.4%).

The table further shows that only 20 (52.6%) of the teachers from private schools have computers at home while the other 18 (47.4%) do not have computers at home.

On the other hand, 37(63.8%) from the public schools have computers and 18 teachers (47.4%) do not have their own computers.

Table 10: Literacy of Teacher Respondents in the Use of Computers in Terms of Self-Efficacy and Technology Utilization

Indicators	Response	Private	Public	As a whole
1. Experience with computers	None	3 (7.9%)	5 (8.8%)	8 (8.4%)
	Very Limited	9 (23.7%)	18 (31.6%)	27 (28.4%)
	Some Experience	15 (39.5%)	12 (21.1%)	27 (28.4%)
	Quite a Little	4 (10.5%)	19 (33.3%)	23 (24.2%)
	Extensive	7 (18.4%)	3 (5.3%)	10 (10.5%)
2. The computer packages (software) used.	Word Processing	32 (84.2%)	32 (55.2%)	64 (66.7%)
	Spreadsheets	21 (55.2%)	16 (27.6%)	37 (38.5%)
	Databases	1 (2.6%)	9 (15.5%)	10 (10.4%)
	Presentation	20 (52.6%)	21 (36.2%)	41 (42.7%)
	Desktop publishing	10 (26.3%)	12 (20.7%)	22 (22.9%)
	Multimedia	17 (44.7%)	17 (29.3%)	34 (35.4%)
3. Do you own a computer?	Yes	20 (52.6%)	37 (63.8%)	57 (59.4%)
	No	18 (47.4%)	18 (37.4%)	39 (40.6%)
4. Do you have access to a computer when you are not in school?	Yes	28 (73.7%)	46 (80.7%)	74 (77.9%)
	No	10 (26.3%)	11 (19.3%)	21 (22.1%)
5. Have you ever attended a computer training course?	Yes	14 (36.8%)	41 (70.7%)	55 (57.3%)
	No	24 (63.2%)	17 (29.3%)	41 (42.7%)

More teachers from the public schools (63.8%) have their own computers than teachers from the private schools (52.6%). There are still those however who still do not have their own personal computers.

To address this particular need, most teachers (80.7%) still find access to a computer when not in school through internet cafes. Though more teachers have their own computers, this however does not erase the fact that there are still those teachers from both private and public schools who find no access to computers (22.1%) outside of their respective schools.

This implies that the lack of computer units by the teachers has somehow contributed to their very limited experience and knowledge on the use of computer softwares or packages that they can use in their effective delivery of instruction to their students at school.

Lastly in this table, there are 14 teachers from the private schools or 36.8% who have attended a computer training course while 24 respondents or 63.2% have not attended any computer training course. On the other hand, there are 41 respondents from the public school or 70.7% who have attended a computer training course while 17 respondents or 29.3% have not attended any computer training course.

It is implied that there are more teachers from the public schools who have attended a computer training course compared to those who are in private schools. This can be attributed to the recruitment requirements in the public schools which specify that an applicant should have undergone computer training comprising 5% of the criteria for qualification. Validating this finding, interviews were conducted with teachers in public and private schools. They narrated that, since the government has been providing computer packages to public schools, the teachers have undergone computer trainings as a requirement for the recipients of these computers. On the other hand, private schools receive no computer packages from the government, thus they don't avail of the trainings similar to the trainings provided for public school teachers.

When the availability of computers and trainings are viewed vis-à-vis teachers' use and background in Office programs, it can be observed that although teachers from public schools are at advantage, the respondents who have more experience in the Office programs are the teachers from private schools. This implies that teachers from the private schools actually use Office programs more than the teachers in the public schools.

Table 11 shows the level of self-efficacy of teachers from private and public schools. From item 1, it is shown that teachers from both private and public schools have average skills in computers. Just as the results of student efficacy, teachers from both private and public schools have shown much enjoyment in computers with both their mean scores interpreted as high. This result agrees with the findings in a research entitled, "What Factors Support or Prevent Teachers from Using ICT in their Classrooms?" in which 75% of the teacher respondents agreed that computers make their lessons more fun. (Cox, Preston and Cox, 1999). Furthermore, research revealed that through the application of educational technology, the teaching and learning activities become enjoyable (Serin, 2011).

Also, both groups say that computers do make them more productive. This result is consistent to their responses in items 5, 6, 7 and 10 where both groups rated with a high mean score, showing that they believe that computers help them perform better as teachers by making teaching interesting, by being helpful research tools and by making learning easier.

On the other hand teachers only scored average in items 4, 8 and 9- items which deal with their confidence in using computers. This implies that teachers only have average confidence in their computer skills but they highly believe that computers can really help them perform better as teachers.

Table 11: Self-efficacy of the Teachers Respondents n = 436

Indicators	**Private**		**Public**		**As a whole**	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. I can usually deal with most difficulties I encounter when using computers.	2.95	Average	2.98	Average	2.97	Average
2. I enjoy working with the computers.	3.54	High	3.47	High	3.49	High
3. Computers make me more productive.	3.87	High	3.72	High	3.78	High
4. I am very confident in my abilities to use computers.	3.28	Average	3.14	Average	3.20	Average
5. Using computers makes teaching more interesting.	3.79	High	3.97	High	3.90	High
6. Some computer packages make the teaching-learning process easier.	3.85	High	3.88	High	3.87	High
7. Computers help me save a lot of time in doing research.	4.05	High	3.97	High	4.00	High

8. I consider myself a skilled computer user.	3.23	Average	2.93	Average	3.05	Average
9. When using computers I am confident about pressing right buttons which will not damage computers.	3.33	Average	3.24	Average	3.28	Average
10. I really need computer skills in order to perform better as a teacher.	3.97	High	3.74	High	3.84	High
Grand Mean	**3.59**	**High**	**3.50**	**High**	**3.55**	**High**

In all of the items, the mean score interpretations for both groups have been consistently the same. In general, teachers from both private and public high schools have both high self-efficacy, although private school teachers score 0.09 mean score higher than those who are in the public schools.

Technology Utilization of the Teacher Respondents:

Table 12 shows teacher respondent's utilization of technology. Part I is about their computer literacy background with basic applications.

Table 12: Technology Utilization of the Teacher Respondents n = 436

Indicators	**Private**		**Public**		**As a whole**	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
I. Computer Literacy Background						
1. Microsoft Word	3.77	High	3.40	Average	3.55	High
2. Other Microsoft Office Programs (PowerPoint, Excel and Publisher)	3.28	Average	3.19	Average	3.23	Average
3. Playing media files on appropriate viewers or players	3.31	Average	3.05	Average	3.15	Average
4. Printing of documents and photos	3.49	High	3.16	Average	3.29	Average
5. Saving files on specified folders and flash drives	3.87	High	3.28	Average	3.52	High
Grand	3.54	High	3.21	Average	**3.35**	**Average**
II. Exposure to different issues						
1. Hackers	2.23	Low	1.95	Low	2.06	Low
2. Spams	2.03	Low	2.00	Low	2.01	Low
3. Plagiarism and Copyrights	2.18	Low	2.09	Low	2.12	Low
4. Cyber-bullying	2.13	Low	1.96	Low	2.03	Low
5. False information	2.10	Low	2.05	Low	2.07	Low
Grand	2.13	Low	2.01	Low	**2.06**	**Low**
III. Accessing the Internet						
1. Access programs and softwares	3.08	Average	2.81	Average	2.92	Average
2.Access public websites and search	3.13	Average	2.84	Average	2.96	Average
3. Join social networking (Facebook,	3.46	High	2.84	Average	3.09	Average
4. Download and Upload files	3.46	High	2.88	Average	3.11	Average
5. Chat and E-mail	3.26	Average	2.89	Average	3.04	Average
Grand	**3.27**	**Average**	**2.85**	**Average**	**3.03**	**Average**

The data show that public school teachers have average background on all computer basics while private school teachers are revealed to have higher background on these computer basic skills, except for other Microsoft Office programs and playing of media files, where they have only average knowledge.

Both groups manifested low exposure to all internet issues. Furthermore, they have generally average skills in accessing the internet, except for Social-Networking and File uploads and downloads where private school teachers have more online activities.

In general, this table implies that teachers use technology at an average level but they lack exposure to internet issues, further implying that in their moderate access to the World Wide Web, they are still vulnerable to internet fraud and, worse, crimes.

TEACHERS' COMPUTER COMPETENCIES:

Results on the Computer Competencies of Teachers show that teachers have satisfactory knowledge on the most basic computer applications, with the exemption of properly configuring peripherals. This implies that teachers can use the basic applications in the computer while needing some assistance when connecting printers, scanners, the projector, etc.

However, teachers do not yet reach a satisfactory level with their use of productivity tools. They can satisfactorily use Word Processor and create presentations, but they have difficulty presenting their projects because of their limitation in using the projector. This can be attributed to their weakness in configuring peripherals as reflected in the first part of this table. Another program they have difficulty in using is the spreadsheet, which could really make teachers' computations faster and easier.

In the third part of this table, teachers only got a fair mean (2.41) in their application of technology to address diversity. Although teachers design lessons and activities to match students' culture, teachers do not often design lessons to cater to the needs of students with special needs

Table 13: Computer Competencies of the Teacher Respondents n = 97

Indicators	Mean	Interpretation
I. Knowledge on Basic Computer Applications		
1. I can identify and define the functions of the main components of the computer.	3.01	Satisfactory
2. I can properly correct main component, configure peripheral and install drivers when required.	2.32	Fair
3. I can organize and manage computer files and directories.	2.52	Satisfactory
4. I can solve minor problems that I encounter when using a computer.	2.42	Satisfactory
5. I can scan and print documents.	2.72	Satisfactory
Mean	2.60	Satisfactory
II. Use of appropriate office and teaching productivity tools.		
1. I use a word processor to enter and edit text on image	2.67	Satisfactory
2. I make computation, use formulas and create graphs using spreadsheets	2.48	Fair
3. I use presentation packages to add text and sequence a presentation	2.52	Satisfactory
4. I enhance slide presentations by adding sound, customizing animation and inserting images	2.51	Satisfactory
5. I make effective class presentations using PowerPoint	2.33	Fair
Mean	2.50	Fair
III. Facilities equitable to technology that addresses learning, social and cultural diversity		
1. I design activities so that disadvantaged students don't feel left out in the class	2.31	Fair
2. I help minimize the effects of the digital device by providing access to digital materials to all students	2.32	Fair
3. I prepare lessons and activities appropriate to the level of learning and cultural background of the students	2.57	Satisfactory
4. The projects I design for the students are fair	2.62	Satisfactory
5. I adapt activities using specialized hardware to software for physically disadvantaged student	2.25	Fair
Mean	2.41	Fair
IV. Applying technology to develop students' higher order thinking skills and creativity		
1. I make students use spreadsheets, concept mapping tools and communicating tool, etc.	2.18	Fair
2. I encourage students to perform data analysis, problem solving, decision making, and exchange of ideas	2.45	Fair
3. I use appropriate slide presentations, videos and other media files in the classroom	2.24	Fair
4. I teach students to use various multimedia materials for report in class	2.24	Fair
5. I design rubrics for accessing student performance in the use of various technologies	2.44	Fair
Mean	2.31	Fair
Grand Mean	**2.46**	**Fair**

Furthermore, when it comes to applying technology to develop students' higher order thinking skills and creativity, teachers only scored fair in all of the items. This implies that teachers do not often use technology in a way that could really make students think and be creative. The table shows that teachers' application of technology is very limited. This may also imply that teachers do not often allow students to use technology by themselves.

In general, teachers get a grand mean of 2.46 with the interpretation of fair. This table implies that though teachers have satisfactory level of knowledge on basic computer applications, this is not enough to equate with the needed skills on the use of office and teaching productivity tools as well as those technologies that address learning, social and cultural diversity and develop the higher, order thinking skills of students. Hence, any plans for training and development of teachers and students should give emphasis on these specific areas.

Teaching Effectiveness of the Teachers as perceived by the Students:

Table 14 deals with teachers' teaching effectiveness in the areas of knowledge of the subject and teaching ability, management of learning and professional competence, teaching for independent learning and evaluation to students, commitment and personality traits and teachers interpersonal relationships. The table shows that teachers are very effective with their teaching skills in all areas.

Part I of the table shows that teachers have high (3.83) level of knowledge on the subject matter and that they have excellent abilities in teaching their knowledge to their students.

Furthermore, teachers also exude excellent learning management skills by professional competence by creating activities that maximize student learning and by updating themselves with latest development in their field of expertise. Table 14 presents the data.

Table 14: Teaching Effectiveness of the Teacher Respondents n = 436

Indicators		
	Mean	Interpretation
I. Knowledge of the Subject and Teaching Ability		
1. Demonstrate mastery of the subject matter without solely relying on the prescribed textbook	3.60	High
2. Integrates subjects to practical circumstances in learning purposes of the students	3.73	High
3. Explains the relevance of present topics to the previous lessons and relates the subject matter to daily life	3.93	High
4. Explains clearly by using concrete examples	3.94	High
5. Helps students retain the lesson to minimize difficulties	3.93	High
Mean	3.83	High
II. Management of Learning and Professional Competence		
1. Creates opportunities for contribution of students in activities	3.76	High
2. Uses Instructional Materials such as videos, and computer-aided instructions to	3.49	High
3. Encourages students to learn and apply technology in class activities and projects	3.82	High
4. Creates teaching strategies that allow students to practice using the concepts they need to understand	3.82	High
5. Is updated with the development in the field of the subject being taught	3.73	High
Mean	**3.72**	**High**
III. Teaching for Independent Learning and evaluation to Students		
1. Enhances students' self-esteem and gives due recognition to students performance	3.88	High
2. Allows students to think independently and make their own decisions	3.92	High
3. Encourages students to learn beyond what is required and help/guide the students how to apply the concepts learned	4.00	High
4. Assignments are followed at through checking and discuss the correct answers	3.89	High
5. Prompt in giving back the results at the given test	3.85	High
Mean	**3.91**	**High**
IV. Commitment and Personality Traits		
1. Regularly comes to class on time and well–groomed to complete assigned responsibilities	4.10	High

2. Keeps accurate records of students' performance and prompt submission of the same	3.92	High
3. Shows interest in assisting students with respect to computer technology in the subject matter	4.00	High
4. Shows patience in explaining difficult lessons	4.00	High
5. Seeks to provide information in answers to difficult questions	3.90	High
Mean	**3.99**	**High**
V. Interpersonal Relationships		
1. Maintains good interpersonal relationships to colleagues and students	4.10	High
2. Treats students equally regardless of gender and mental capacity	3.99	High
3. Respects students' varying opinions	4.15	High
4. Conscious of relevant topics for the good of the students	4.02	High
5. Has a good sense of humor	4.04	High
Mean	4.06	High
Grand Mean	**3.89**	**High**

It has also been revealed that teachers use strategies in class that encourage students' independent learning. Teachers have also been shown to be great designers of evaluation techniques that efficiently gauge student learning.

Students perceive their teachers as having high level of commitment in their profession and having good personality traits. Teachers have scored high with a mean of 3.99 which show that they are sincerely concerned for their students' welfare.

Lastly in this table, teachers had been rated high by their students in their interpersonal relationship. This implies that students perceive their teachers very positively.

In general, teachers have a mean of 3.89 with the interpretation of high for the whole table 14 which implies that teachers have high level of teaching effectiveness as perceived by the student respondents.

ACADEMIC PERFORMANCE OF STUDENTS:

The mean average of the student respondents' academic performance based on their general average from last academic year is 88.218% is general.

Table 15: Academic Performance of the Student Respondents n = 436

Indicators	**Private**		**Public**		**As a whole**	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
Academic Performance	87.8563	Proficient	88.4370	Proficient	88.2180	Proficient

Interpretation based on Enclosure #8 DepEd Order #73 s. 2012

90% and above - Advanced

85% to 89% - Proficient

80% to 84% - Approaching Proficiency

75% to 79% - Developing

74 and below - Beginning

Private school student respondents have a mean average of 87.8563 which has the interpretation of Proficient. Public school respondents have a mean average of 88.4370, also interpreted as Proficient. In general, student respondents are considered proficient based on their previous year's general average.

DIFFERENCE IN COMPUTER LITERACY OF STUDENTS FROM PUBLIC AND PRIVATE SCHOOLS:

Table 16 presents data that test if there exists a difference on the computer literary between the two groups. In part A, the difference between the self-efficacy of private school students and that of the public school students is highly significant.

This result implies that private school students are more self-efficient with their computer skills compared to public school students with a very high significance.

In the second part of the table, a highly significant difference has been revealed between the Computer Literacy Background of private school students and that of the public school students. This data implies that private school students have more background in computer. This implication can be related to the first part's result where private school students have more access to computers, resulting to their more established background with the most basic functions of computers.

Table 16: Difference Analysis in Computer Literacy of the students in terms of self-efficacy and Technology Utilization using Mann-Whitney U test

INDICATORS	STATISTICS	
A. Self-Efficacy	Sig. Value Conclusion	0.000 0.01 Highly Sig.
B. Technology Utilization		
1. Computer Literacy Background	P-Value Sig. Value Conclusion	0.000 0.01 Highly Sig.
2. Exposure to Different Issues	P-Value Sig. Value Conclusion	0.700 0.05 Not Sig.
3. Accessing the Internet	P-Value Sig. Value Conclusion	0.004 0.01 Highly Sig.
As a whole	P-Value Sig. Value Conclusion	0.000 0.01 Highly Sig.

Highly significant if p-value is lesser than 0.01
Not significant if p-value is greater than 0.05

In this table, only the students' Exposure to Different Issues shows no significant difference. This implies that although private school students are more exposed to many aspects of computer literacy, they are just as unaware of the issues regarding the internet as the public school students who have less exposure to computers. This further implies that the availability of computers doesn't guarantee one's awareness of the issues regarding computers and the internet.

Another highly significant result has been revealed between private school students' access to the internet and that of the public school students. This result implies that private school students use the internet more efficiently than the public school students. This can be attributed to the previous results in this table which show that private school students have more access to computers, thus they have more skills in using the internet.

Overall, Table 16 reveals a highly significant difference between self-efficacy of private school students and the self-efficacy of public school students. **This implies that private school students are more self-efficient with computers and the internet than the public school students.**

Therefore, the first null hypothesis stating that there is no significant difference in computer literacy of students in terms of self-efficacy and technology utilization when grouped according to private school and public school is rejected in this study.

This result is in consonance with the findings of Osunwusi and Abifarin (2013) that private school students were more engaged in computer literacy due to the fact that that private secondary school students have access to, and use, the computer in higher measures than public secondary school students.

Furthermore, another study on Factors Affecting Computer Literacy of College Students in Taiwan revealed that the computer literacy of students graduated from private school are better than those students graduated from public school (Hsiao and Lin, 2009).

DIFFERENCE IN COMPUTER LITERACY OF PRIVATE AND PUBLIC SCHOOL TEACHERS:

The result in part 1 of the table shows that there is no significant difference between the two groups. **This implies that teachers from private schools have just the same level of self-efficacy as the public school teachers.**

The second part of the table reveals that there also no significant difference between private school teachers' exposure to internet issues and that of the public school teachers. Furthermore, there is also no significant difference between the two groups' access to the internet.

Overall, Table 6 reveals no significant difference between the computer literacy of teachers from private and public schools.

Table 17: Difference Analysis in Computer Literacy of the teachers in terms of self-efficacy and Technology Utilization using Mann-Whitney U test

INDICATORS	STATISTICS	
A. Self-Efficacy	U-test Coeff. P-Value Sig. Value Conclusion	1087.50 0.733 0.05 Not Sig.
B. Technology Utilization		
1. Computer Literacy Background	U-test Coeff. P-Value Sig. Value Conclusion	912.00 0.097 0.05 Not Sig.
2. Exposure to Different Issues	U-test Coeff. P-Value Sig. Value Conclusion	1038.50 0.563 0.05 Not Sig.
3. Accessing the Internet	U-test Coeff. P-Value Sig. Value Conclusion	882.00 0.077 0.05 Not Sig.
As a whole	U-test Coeff. P-Value Sig. Value Conclusion	895.00 0.072 0.05 Not Sig.

Not significant if p-value is greater than 0.05

DIFFERENCE OF COMPUTER COMPETENCIES OF TEACHERS FROM PUBLIC AND PRIVATE SCHOOLS:

Table 18 compares the computer competencies of teachers from public and private high schools. Results show that the teachers' Knowledge and Skills on Basic Computer Applications do not have any significant relationship. This implies that private and public school teachers do not have any significant difference when it comes to their basic computer skills.

Likewise results show that there is no significant relationship between public and private school teachers when it comes to their use of appropriate office and teaching productivity tools.

Table 18: Difference Analysis in Computer Competence of teachers when grouped according to the type of their school using Mann-Whitney U test

INDICATORS	STATISTICS	
A. Knowledge and Skills on Basic Computer Applications	U-test Coeff. P-Value Sig. Value Conclusion	995.50 0.298 0.05 Not Sig.
B. Use of appropriate office and teaching productivity tools	U-test Coeff. P-Value Sig. Value Conclusion	901.00 0.079 0.05 Not Sig.

C. Facilities equitable to technology that addresses social and cultural diversity	U-test Coeff. P-Value Sig. Value Conclusion	1110.00 0.870 0.05 Not Sig.
D. Application of technology in developing students' higher order of thinking skills and creativity.	U-test Coeff. P-Value Sig. Value Conclusion	1021.00 0.393 0.05 Not Sig.
Competence (As a whole)	U-test Coeff. P-Value Sig. Value Conclusion	1046.00 0.508 0.05 Not Sig.

Not significant if p-value is greater than 0.05

Furthermore, no significant relationship can be found in the teachers' facilities equitable to technology that addresses social and cultural diversity. Also, there is no significant relationship between the application of technology in developing students' higher order thinking skills and creativity when the result of private school teachers are compared to the results of the public school teachers.

Hence, the second null hypothesis stating that there is no significant difference in computer competencies of teachers when grouped according to private school and public school is accepted.

DIFFERENCE BETWEEN STUDENTS' COMPUTER LITERACY AND THEIR DEMOGRAPHIC CHARACTERISTICS:

Table 19 specifically deals with students' computer literacy, in terms of self-efficacy and computer utilization, compared to their demographic characteristics. In the first item, the table shows that there is no significant difference between the self-efficacy of male and female students. This implies that sex does not have any significant influence on a student's self-efficacy.

Furthermore, no significant difference has been revealed between the technology utilization of male and female students. This implies that sex doesn't have any influence on how much students use computers and the internet.

When it comes to the difference among different year levels, it has been revealed that students' self-efficacy are not affected by their year level.

Table 19: Difference Analysis on students' computer literacy when grouped according to their profile using Mann-Whitney U test and Kruskall-Wallis H test

PROFILE	STATISTICS	SELF- EFFICACY	TECHNOLOGY UTILIZATION
A. Sex	U-test Coeff. P-Value Sig. Value Conclusion	20283.00 0.954 0.05 Not Sig.	19049.00 0.250 0.05 Not Sig.
B. Grade/ Year Level	Chi-square Coeff. P-Value Sig. Value Conclusion	3.868 0.276 0.05 Not Sig.	10.467 0.015 0.05 Sig.
C. Mother's Educational Attainment	Chi-square Coeff. P-Value Sig. Value Conclusion	38.819 0.000 0.01 Highly Sig.	38.221 0.000 0.01 Highly Sig.
D. Father's Educational Attainment	Chi-square Coeff. P-Value Sig. Value Conclusion	30.760 0.000 0.01 Highly Sig.	41.267 0.000 0.01 Highly Sig.

Not significant if p-value is greater than 0.05
Significant if p-value is lesser than 0.05
Highly Significant if p-value is lesser than 0.01

However, a significant difference has been revealed when it comes to their technology utilization. The appendix table supporting Table 9.a illustrates how students' technology utilization increases in mean score as the year level increases. In Table 19 itself, a significant difference can be observed among different year levels which implies that while students' year level goes up, their technology utilization also increases. This can be attributed by the fact that students in the higher year levels are given more opportunities to use the school's computers.

On the third part of Table 19, a highly significant difference has been revealed between the educational attainment of students' parents and their self-efficacy. This implies that the higher the mother's educational attainment is, the higher the student's self-efficacy and technology utilization become. This implication can be related to the amount of income generated by the mother which significantly influences the student's access to computers and the development of technological skills brought about by the ability of resources and materials. As the United States' Bureau of Labor Statistics revealed in 2013 survey, people with higher educational attainment do get higher compensations in their jobs. (USA BLS, 2013)

Similarly, a highly significant correlation has also been established between a students' self-efficacy and the father's educational attainment. Another high significance has been established between a student's technology utilization and the father's educational attainment. This can be attributed to the previous result among age brackets where younger teachers also have high self-efficacy and technology utilization- that it is assumed that most single teachers are younger than the married ones.

DIFFERENCE BETWEEN TEACHERS' COMPUTER LITERACY AND THEIR DEMOGRAPHIC CHARACTERISTICS:

Table 20 deals with the difference between Teachers' computer literacy and their demographic characteristics. The first item on this table shows that there is a significance between teachers' age and their self-efficacy. The appendix table for Table9.b reveals that the older the teacher is, the lower his/her mean score in self-efficacy become, the difference between age brackets having high significance.

When teachers are grouped according to sex, no significant correlation has been established with either self-efficacy nor technology utilization. This implies that sex does not have any significant influence on teachers' computer literacy.

There is a highly significant relationship revealed between teachers' civil status and their computer literacy both in self-efficacy and technology utilization. Appendix table for this part reveals that single teachers have higher mean score for self-efficacy and for technology utilization compared to those who are married.

There is also a highly significant correlation between teachers' length of service and both their self-efficacy and technology utilization.

Appendix table supporting this table reveals that the longer the teacher stays in service, the lower the self-efficacy and technology utilization become. However, the length of service might be a redundant variable since this is also directly proportional to age. Thus, the result for age can also be equated to the result in the length of service.

Table 20: Difference Analysis on Teachers' computer literacy when grouped according to their profile using Mann-Whitney U test and Kruskall-Wallis H test

PROFILE	STATISTICS	SELF- EFFICACY	TECHNOLOGY UTILIZATION
A. Age	Chi-square Coeff. P-Value Sig. Value Conclusion	8.223 0.041 0.05 Sig.	20.677 0.000 0.01 Highly Sig.
B. Sex	U-test Coeff. P-Value Sig. Value Conclusion	861.50 0.296 0.05 Not Sig.	837.50 0.226 0.05 Not Sig.
C. Civil Status	U-test Coeff. P-Value Sig. Value Conclusion	708.00 0.002 0.01 Highly Sig.	515.00 0.000 0.01 Highly Sig.

D. Highest educational attainment	Chi-square Coeff. P-Value Sig. Value Conclusion	30.760 0.000 0.01 Highly Sig.	41.267 0.000 0.01 Highly Sig.
E. Length of Service	Chi-square Coeff. P-Value Sig. Value Conclusion	12.368 0.006 0.01 Highly Sig.	23.971 0.000 0.01 Highly Sig.
F. Number of subject/ workload	Chi-square Coeff. P-Value Sig. Value Conclusion	1.339 0.720 0.05 Not Sig.	1.498 0.683 0.05 Not Sig.
G. Monthly Income	Chi-square Coeff. P-Value Sig. Value Conclusion	5.460 0.141 0.05 Not Sig.	6.849 0.077 0.05 Not Sig.

Not significant if p-value is greater than 0.05

Significant if p-value is lesser than 0.05

Highly Significant if p-value is lesser than 0.01

The table shows no significant correlation between teachers' work/subject load and both their self-efficacy and technology utilization. This implies that the number of subject/work load does not have any significant influence to the teachers' computer literacy.

Another variable that does not affect the teachers' self-efficacy and technology utilization is the amount of monthly income. This implies that the teachers' salary does not affect their computer literacy.

The characteristics with significant relationship with computer literacy among students are their year level and parents' educational attainment. This result is in consonance with Hsiao and Lin's (2009) findings that the students' fathers' education level and the degree of computer literacy of students are significantly correlated. Whereas, the characteristics with significant correlation with computer literacy among teachers are age, civil status, educational attainment and length of service. With these results considered, the third null hypothesis that there is no significant difference on students' and teachers' computer literacy when grouped according to their demographic characteristics is rejected.

DIFFERENCE IN COMPUTER LITERACY OF STUDENTS IN TERMS OF SELF-EFFICACY AND TECHNOLOGY UTILIZATION WHEN GROUPED ACCORDING TO FAMILY INCOME:

The table shows a highly significant relationship between students' self-efficacy with computers and their respective family income. This implies that the more income a family has, the more efficient the children become with their computer skills. This means that students become more skilled in computers and have more exposure to the use of computers when their parents are more financially stable. Furthermore, it can be implied that parents with higher income are able to provide their children more tools and opportunities to be exposed to computers. Thus, students in high-earning families become more efficient in computers compared to students from low-earning families.

When it comes to technology utilization, a highly significant relationship had also been established between family income and students' computer literacy background. As mentioned in the previous paragraph, this relationship can be attributed to the fact that higher-income parents are more financially capable of proving technological tools and opportunities for computer exposure to their children.

Table 21: Difference Analysis in Computer Literacy of the students in terms of self-efficacy and Technology Utilization when grouped according to their family income using Mann-Whitney U test

INDICATORS	STATISTICS	
A. Self-Efficacy	U-test Coeff. P-Value Conclusion	14180.50 0.000 Highly Sig.
B. Technology Utilization		
1. Computer Literacy Background	U-test Coeff.	12507.00

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	P-Value Conclusion	0.000 Highly Sig.
2. Exposure to Different Issues	U-test Coeff. P-Value Conclusion	18498.00 0.284 Not Sig.
3. Accessing the Internet	U-test Coeff. P-Value Conclusion	12122.00 0.004 Highly Sig.
As a whole	U-test Coeff. P-Value Conclusion	12779.00 0.000 Highly Sig.

Highly significant if p-value is lesser than 0.01

Another significant relationship had been found between family income and the students' access to the internet. This area of technology utilization is closely related to the accessibility of computers to students. Thus, students' rich experience with the internet can be attributed to the fact that computers with internet connection are easily accessible to those whose families earn more, compared to those whose families earn less.

However, an insignificant relationship has been established between students' exposure to issues regarding the internet. This means that whether family income is high or low, students' exposure to issues in the internet is not affected. A student may be using computers more than the others but could remain as vulnerable to cybercrimes as his/her counterparts. This further shows that students, both from high-income and low-income families, are vulnerable to different issues regarding the internet.

Having presented the relevance of family income to students' efficacy with computers and their level of technology utilization, it can be observed that family income really plays a vital role in students' knowledge, skills and experiences with the information technology. Given these findings, the fourth null hypothesis stating that there is no significant difference in Computer Literacy of the students in terms of Self-Efficacy and Technology Utilization when grouped according to their family income has been rendered void.

DIFFERENCE IN STUDENTS' ACADEMIC PERFORMANCE WHEN GROUPED ACCORDING TO THEIR FAMILY INCOME:

To strengthen the previous findings shown in Table 21, the next table yields results that clearly illustrate the importance of finances to students' academic success. There is, indeed, a highly significant relationship between the Family Income and the Students' Academic Performance. Hence, the fifth null hypothesis stating that there is no significant difference in the students' Academic Performance when grouped according to their Family Income has been proven void in this study.

Table 22: Difference Analysis in students' academic performance when grouped according to their family income using two-sampled independent t-test

INDICATOR	STATISTICS	
Students' Academic Performance	t-test Coeff. P-Value Conclusion	-4.293 0.000 Highly Sig.

If we put into consideration the common assumption that private school students are generally more well-off than public students, we could further relate this results to the other findings in this research that shows that private school students have more access to computers and the internet compared to public school students. This further results to their higher self-efficacy and technology utilization, which further results to their higher academic performance.

Looking at a different, but closely related route to higher academic performance, family income has been established to be one of the key factors to students' higher academic performance. When the two angles are examined hand in hand, it can be concluded that private school students have higher academic performance than public school students because they have more means to accessing the internet and using computers. They are provided these technological tools by their families who have higher incomes. Thus public school students, on the other hand, need to be compensated for their families' lower income by providing for them the technological tools which they could use to widen their knowledge and improve their skills on the computer technology.

RELATIONSHIP BETWEEN COMPUTER LITERACY OF STUDENTS AND THEIR ACADEMIC PERFORMANCE:

The result reveals that there is a significant low positive correlation that exists between the Students' Self-Efficacy and Academic Performance. This result reveals that the self-efficacy of the students had a low but significant positive influence on their academic performance.

Table 23: Relationship Analysis between Students' Self-efficacy and Technology Utilization and Students' Academic Performance using Spearman's rho Correlation Coefficient

INDICATORS	STATISTICS	
Students' Self-Efficacy and Academic Performance	Spearman's Rho Corr. Coeff.	0.120
	Probability Value	0.013
	Sig. Value	0.05
	Conclusion	Sig.
	Corr. Interpretation	Low
Students' Technology Utilization and Academic Performance	Spearman's Rho Corr. Coeff.	0.638
	Probability Value	0.000
	Sig. Value	0.01
	Conclusion	Highly Sig.
	Corr. Interpretation	High

Significant if p-value is lesser than 0.05

Highly Significant if p-value is lesser than 0.01

On the other hand, the correlation between students' technology utilization and their academic performance is highly significant. This implies that students who have more experience with computers and who are allowed to utilize computers are more likely to have higher academic performance. This data further imply that teachers could help students achieve higher academic performance by assigning them activities that will make them use technology.

The highly significant correlation between students' technology utilization and their academic performance can be explained by the study conducted by Lowther, et al. (2008) where the researchers found out that when students use ICT, their autonomy and capability in learning are also developed. Through collaborative learning with ICT, the students have more opportunity to build new knowledge onto their background knowledge (Lowther et al:2008).

This findings further prove John Dewey's popular principle of learning by doing. In this table, it has been established that students need to have hands-on experience with computers and utilize technology by themselves in order to grasp lessons, resulting to higher academic performance.

However, having a high level of computer literacy does not necessarily mean that a student will perform better academically since academic performance is affected by many other factors, an example of which is students' conscientiousness. "Results suggest that Neuroticism may impair academic performance, while Conscientiousness may lead to higher academic achievement." (Premuzic and Tomas: 2003).

RELATIONSHIP BETWEEN COMPUTER LITERACY OF TEACHERS AND STUDENTS' ACADEMIC PERFORMANCE:

Table 24 shows that teachers' self-efficacy and technology utilization have moderate to high correlation to students' academic performance. However, this correlation is not significant as revealed by Spearman's rho Correlation Coefficient.

This data imply that although teachers might have high self-efficacy and technology utilization, it is not a guarantee that their students will have high academic performance. Thus, the seventh null hypothesis stating that there is no significant relationship between the Students' and Teachers' Self-efficacy and Technology Utilization and Teachers' Teaching Effectiveness is accepted in this study.

On the other hand, if students have high technology utilization, it will positively affect their academic performance.

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Table 24: Relationship Analysis between Teacher's Self-efficacy and Technology Utilization and Students' Academic Performance using Spearman's rho Correlation Coefficient

INDICATORS	STATISTICS	
Teachers' Self-Efficacy and Students' Academic Performance	Spearman's Rho Corr. Coeff.	0.460
	Probability Value	0.220
	Sig. Value	0.05
	Conclusion	Not Sig.
	Corr. Interpretation	Moderate
Teachers' Technology Utilization and Students' Academic Performance	Spearman's Rho Corr. Coeff.	0.220
	Probability Value	0.580
	Sig. Value	0.05
	Conclusion	Not Sig.
	Corr. Interpretation	High

Not Significant if p-value is greater than 0.05

It can be further implied that the students' technology utilization is more important than their self-efficacy. But the students' computer literacy as a whole is more important than the teachers' computer literacy in order to make a significant positive influence to their academic performance.

Although teachers' computer literacy do not have any significant influence on their students' academic performance, the students computer literacy do have significant influence on their own academic performance. Hence, the sixth null hypothesis stating that there is no significant relationship between students' and teachers' computer literacy in terms of knowledge and utilization and their academic performance is rejected.

RELATIONSHIP OF TEACHERS' COMPUTER COMPETENCE AND THEIR TEACHING EFFECTIVENESS:

Table 25 shows that there is a moderate correlation between teachers' Computer Competence and their Teaching Effectiveness.

Table 25: Relationship Analysis between the Teachers' Competence and Teaching Effectiveness using Spearman's rho Correlation Coefficient

INDICATORS	STATISTICS	
Teachers' Competence and Teaching Effectiveness	Spearman's Rho Corr. Coeff.	0.347
	Probability Value	0.327
	Sig. Value	0.05
	Conclusion	Not Sig.
	Corr. Interpretation	Moderate

Not Significant if p-value is greater than 0.05

However, this correlation does not have any significant value. This implies that the teachers' computer competency does not have any significant influence on their teaching proficiency. It can be further implied that even if the teacher is not computer competent, he/she can still be very proficient in with his/her teaching skills.

Therefore, the eighth hypothesis stating that there is no significant relationship between teachers' computer competencies and their teaching effectiveness is accepted.

RELATIONSHIP BETWEEN STUDENTS' AND TEACHERS' SELF-EFFICACY AND TECHNOLOGY UTILIZATION AND TEACHERS' TEACHING EFFECTIVENESS:

The table shows that the students' self-efficacy do not have any significant correlation with the teachers' teaching effectiveness. This implies that the teachers' effectiveness in teaching do not affect students' self-efficacy in using computers.

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Table 26: Relationship Analysis between the Students' Self-efficacy and Technology Utilization and Teachers' Teaching Effectiveness using Spearman's rho Correlation Coefficient

INDICATORS	STATISTICS	
Students' Self-Efficacy and Teachers' Teaching Effectiveness	Spearman's Rho Corr. Coeff.	0.127
	Probability Value	0.726
	Conclusion	Not Sig.
Students' Technology Utilization and Teachers' Teaching Effectiveness	Spearman's Rho Corr. Coeff. Probability Value Conclusion	0.012 0.973 Not Sig.

Not Significant if p-value is greater than 0.05

Furthermore, the table also reveals that there is no significant relationship existing between students' technology utilization and the teachers' teaching effectiveness. This implies that no matter how effective or ineffective the teachers' are with their job, the students' utilization of technology are not affected.

The table reveals that neither the students' self-efficacy in computers nor their utilization of the computer technology are affected by teachers' teaching effectiveness. Moreover, the teachers' teaching effectiveness does affect students' self-efficacy and utilization of computer technology.

The next table shows that there is no significant relationship between teachers' self-efficacy in using computers and their teaching effectiveness. This implies that a teacher's knowledge, skills and exposure to computers does not make him/her more effective in teaching. Thus, teachers' self-efficacy with computers does not have any influence over their teaching effectiveness.

Moreover, teachers' utilization of the computer technology also yields no significant relationship with their teaching effectiveness. This implies that no matter how much teachers actually use computers in their private life and in the classroom, their effectiveness as teachers remain unaffected.

Table 27: Relationship Analysis between the Teachers' Self-efficacy and Technology Utilization and Teachers' Teaching Effectiveness using Spearman's rho Correlation Coefficient

INDICATORS	STATISTICS	
Teachers' Self-Efficacy and Teaching Effectiveness	Spearman's Rho Corr. Coeff. Probability Value Conclusion	0.401 0.250 Not Sig.
Teachers' Technology Utilization and Teaching Effectiveness	Spearman's Rho Corr. Coeff. Probability Value Conclusion	0.115 0.751 Not. Sig.

Not Significant if p-value is greater than 0.05

Considering the two items in the table, it is established in this research that being an effective teacher does not require computer knowledge and skills. Also the use of computers by teachers do not make them better teachers when compared to those who do not or cannot use computers.

RELATIONSHIP BETWEEN TEACHERS' COMPUTER COMPETENCIES AND STUDENTS' ACADEMIC PERFORMANCE:

Table 28 shows that there is a high correlation between teachers' computer competencies and the students' academic performance. However, this correlation is not significant.

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Table 28: Relationship Analysis between the Teachers' Competence and Students' Academic Performance using Spearman's rho Correlation Coefficient

INDICATORS	STATISTICS	
Teachers' Competence and Students' Academic Performance	Spearman's Rho Corr. Coeff.	0.529
	Probability Value	0.116
	Sig. Value	0.05
	Conclusion	Not Sig.
	Corr. Interpretation	High

Not Significant if p-value is greater than 0.05

It can be implied that even if teachers are competent with computers, it does not guarantee students' higher academic performance. Therefore, the ninth hypothesis stating that there is no significant relationship between teachers' computer competencies and students' academic performance is accepted.

This can be attributed to the fact that teachers do not often translate their own computer competence into activities that provide students opportunities to learn by themselves.

RELATIONSHIP BETWEEN TEACHERS' EFFECTIVENESS AND STUDENTS' ACADEMIC PERFORMANCE:

Table 29 shows that there is a high correlation between teachers' teaching effectiveness and their students' academic performance and this correlation has been revealed as significant by the Spearman's rho Correlation Coefficient.

Table 29: Relationship Analysis between the Teachers' teaching effectiveness and Students' Academic Performance using Spearman's rho Correlation Coefficient

INDICATORS	STATISTICS	
Teachers' Effectiveness and Students' Academic Performance	Spearman's Rho Corr. Coeff.	0.661
	Probability Value	0.038
	Sig. Value	0.05
	Conclusion	Sig.
	Corr. Interpretation	High

Significant if p-value is lesser than 0.05

This implies that the teachers' teaching effectiveness has a significant, positive influence on the students' academic performance. When data from Table 29 is taken into account, it can be implied that teachers need to be efficient with their teaching rather than be competent with computers in order to achieve higher academic performance.

Therefore, the tenth hypothesis stating that there is no significant relationship between teachers' teaching effectiveness and students' academic performance is rejected.

This result has also been revealed in the study by Adu and Tado (2007) that each of the teacher effectiveness variables could predict student achievement. Also, Harold Wenglinsky (2001) found in his study that effective teachers can contribute much to student learning.

5. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter contains the summary of findings, conclusions, and recommendations of the researcher based on the study conducted regarding the effects of computer literacy and competencies of students and teachers to their academic performance.

Summary of Findings:

The study reveals several findings that help answer the major questions in this study.

The data gathered reveal that private school students are more self-efficient with their computer skills compared to public school students with a very high significance. Furthermore, private school students also have a richer computer background than public school students especially that 30% of the students from private schools own computers while

among public school students, only 11% of them have computers. Furthermore, private school students have more access to computers outside the school compared to students in the public school.

Moreover, it has been revealed that the educational attainment of students' parents positively affect students' computer literacy.

In the case of teachers however, there is no significant difference between the private school teachers' computer literacy and that of the public school teachers. However, it has been revealed that younger teachers are more computer literate than the older ones. This is supported by the additional findings that teachers who have the shortest length of service are more computer literate than those who have been in service the longest.

However, these facts don't discriminate teachers by age because this study also reveals that there is no significant correlation between teachers' computer literacy and students' academic performance. Also, teachers' computer competence do not have any significant influence on their own teaching effectiveness, the latter being the only teacher factor that has immediate influence over students' academic performance.

Teachers from the private schools actually use Office programs more than the teachers in the public schools despite the public school teachers better access to computers.

A crucial factor for students' academic performance is their computer literacy, including both self-efficacy and technology utilization. However, there is a significant difference in computer utilization among year levels.

It has been revealed that Grade 7 students utilize technology the least while Fourth Year students utilize technology the most.

When it comes to self-efficacy, it has been revealed that there is no significant difference among year levels. It is therefore implied that although students have the same level of computer background and skills, the opportunities for technology utilization are mostly entrusted to those who are already in the higher year level.

When it comes to technology utilization, a highly significant relationship had also been established between family income and students' computer literacy background. This relationship can be attributed to the fact that higher-income parents are more financially capable of proving technological tools and opportunities for computer exposure to their children.

Furthermore, another significant relationship had been found between family income and the students' access to the internet. This area of technology utilization is closely related to the accessibility of computers to students. Thus, students' rich experience with the internet can be attributed to the fact that computers with internet connection are easily accessible to those whose families earn more, compared to those whose families earn less.

Looking at the teachers' influence on students, it has been revealed that teachers sometimes use technology but not enough to really make students think and be creative. The results show that teachers' application of technology is very limited. This also implies that teachers do not satisfactorily allow students to use technology by themselves.

In this study, it has been revealed that students' academic performance is highly influenced by the teachers' teaching effectiveness and not by the teachers' computer literacy nor by their competence in technology.

6. CONCLUSIONS

Based on the findings of this study, the following conclusions were drawn:

Teachers have some access to computers and have satisfactory level of competencies in the basic applications, but are still wanting more training in order to help them enhance presentations, make use of the spreadsheet and use peripherals necessary to accomplish activities. Also, younger teachers are more computer literate than the older ones.

Both students and teachers are vulnerable to the many issues in the internet:

Students' computer literacy positively influence their academic performance. Furthermore, private school students have higher level of computer literacy compared to public school students.

Private school students are generally more well-off than public students and have more access to computers and the internet compared to public school students. They have higher self-efficacy and technology utilization, which further results to their higher academic performance.

Based on the findings that there is no significant relationship between the teachers' computer competence and teaching effectiveness, it can be concluded that in order to positively affect students' academic performance, it is not mandatory for teachers to be skilled in technology. On the other hand, in order to help students achieve higher academic performance, teachers have to be effective, with or without the use of computer technology.

Students' academic achievement is influenced by their own computer literacy. However, students in the lower years utilize computers less than the students in the higher years. Another factor lowering students' self-efficacy and computer utilization is their parents' academic achievements.

7. RECOMMENDATIONS

Out of the findings and conclusions drawn out from this study, the following recommendations have been formulated:

1. Schools must provide computer facilities accessible by all year levels to provide students adequate opportunities to utilize computers.

2. Available computer packages, especially in the public schools, must be maximized by encouraging students to use them more often.

3. Students in the lower years should be given more opportunities to utilize technology through various activities since they are just as self-efficient as the students in the higher year levels.

4. Teachers must focus on enhancing over-all teaching effectiveness and not just rely on technology to help students learn better.

5. Students in public schools must be given more opportunities to actually use the government-provided computer packages to compensate to the fact that they do not have enough access to computers outside the school.

6. Teachers should allow students to actually use technology by themselves in order to develop higher-order thinking skills.

7. Teachers should undergo advanced computer technology training to help them enhance presentations, make use of the spreadsheet for grade computation and design activities which would allow students to integrate computers in their projects and outputs.

8. Students and teachers have to be made more aware and cautious regarding issues in the internet especially that they are generally active in social-networking sites.

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