## BIBLIOGRAPHY

JERAHMEEL B. LASEGAN. April 2007. *Computer literacy of Teachers in the Secondary Schools of Buguias, Benguet Division.* Graduate School, Benguet State University – Buguias Campus, Loo, Buguias, Benguet.

Adviser: Carlos P. Luma-ang, Ed. D.

## ABSTRACT

This study aimed to determine the level of attainment of the objectives of computer education; to determine the teachers' level of computer competencies in terms of Microsoft word, Microsoft excel, Microsoft power point and Internet; to determine if there is a significant relationship of the socio-professional profile of the teachers to their computer competencies; to find out the degree of adequacy of computers in the secondary schools of Buguias; to determine if there is a significant effect of the adequacy of computers to the attainment of the objectives; and to determine if there is a significant correlation of the computer competencies to the attainment of objectives.

The study was conducted in the public secondary schools of Buguias, Benguet Division. There were ninety six secondary school teachers included in the study. The data were gathered during the first semester of school year 2006-2007. The data were statistically analyzed applying percentage, weighted mean,
t-test, Chi-square and Spearman's coefficient of correlation by ranks.

The findings revealed that the objectives of computer education were moderately attained. The secondary school teachers' are competent in Microsoft word and Microsoft

excel but not competent in Microsoft power point and internet software. Age, gender, civil status, educational attainment, years of teaching experience and trainings and seminars attended did not affect the computer competencies of the teacher. The secondary schools of Buguias are inadequate with computers. There is a significant effect of the adequacy of computers in the attainment of the objectives and the computer competencies of the secondary teachers in correlation with the attainment of the objectives.

The leading recommendations are teachers should make use of computers and computer related technologies in their classrooms; they should attend more trainings and seminars in relation to computer education especially hands-on trainings on computers; all of them must be required to be computer literate; school heads under the School Based Management should find ways and means to avail more computer units for their school; they should be given more time in learning computer applications and engage themselves in computer technology, secondary school teachers should utilize the software such as Microsoft word, Microsoft excel, Microsoft power point and internet in their work and find time to update their skills in computer.

TABLE OF CONTENTS

## INTRODUCTION

Background of the Study

The world we live in today is very different from what it was a century, even a few decades ago. This transformation has been driven in part by rapid technological innovation. While the 19th century saw the rise of the industrial revolution with steam powered machines intensifying and expanding human productive power, the 20th century was characterized by the birth of computer technologies that extended the reach of human creativity even more possible and made possible ways by which humans could live and work together (Stair, 1985)

In the past fifty years, technology has made more available information, once a scarce resource. With computers and internet technologies in particular, more people can now have access to more information more quickly than ever before. Moreover, the exponential growth in information has led to a corresponding exponential growth in the production of new information (Schware, 2000)

Educational institutions acknowledge that they must move apace with technology driven changes in society and economy. In today's knowledge, society not only must schools ensure that learners possess the competencies to wield these new information and communication tools productively, they must equip learners with the critical and analytic tolls necessary to live and flourish in an information saturated environment.

Computers play an integral role in the education teachers provide. Resources such as educational software and the Internet expose students to a vast range of experiences and promote interactive learning. Through the Internet, students can communicate with other students anywhere in the world, allowing them to share experiences and differing viewpoints. Students also use the Internet for individual research projects and to gather information. Computers are used in other classroom activities as well, from solving math problems to learning English as a second language. Teachers also may use computers to record grades and perform other administrative and clerical duties. They must continually update their skills so that they can instruct and use the latest technology in the classroom (Department of Labor, 2006).

The use of computers in education opens a new area of knowledge and offers a tool that has the potential to change some of the existing educational methods. The use of computers on people's desktops for word processing, communicating with others, preparing class projects presentations, searching the internet, creating computationally intensive spreadsheets, and record keeping in database management systems is now an accepted norm (Hsu, 2005).

The teacher is the key to effective exploitation of this resource in the educational system. As computer use continues to increase in society, educators must also prepare for the use of computers within the classroom. This involves all levels of education, including elementary and secondary schools (Asan, 2003).

The future ramifications of adopting technology into instructional settings can be significant and far reaching. As a direct result to technological innovations, methods of information delivery by instructors and reception by students in the future will be very different form the traditional methods employed today.

Computers have been used behind the scenes for many years in schools for record keeping and accounting purposes. Now, they are rapidly coming into classroom-elementary, secondary and college. Many teachers feel that computer education is a necessity, not a novelty (Capron, 1990).

In “the old days” business computer systems were designed so that a computer professional served as an intermediary between the user and the computer system. Users, who are sometimes called end users, are blue and white collar workers who use the computer to help them do their jobs better. The use of friendly computer systems and software which have played a major role in the computer revolution, minimize the need for users to go through the computer professional and permit users to extract information directly from the computer system. Friendly computer systems and software enable the user to interact with them in a non-technical and non-threatening manner (Burstein, 1986).

The dynamics of a rapidly advancing computer technology demands a constant updating of skills and expertise. By very nature, computers bring about change. With the total amount of computing capacity in the world doubling every two years (Long, 1994), we can expect even more dramatic change in the future.

The cumulative effects of these changes are altering the basic constructs of society and the way we live, work and play. Terminals and microcomputers have replaced calculators and ledger books; electronic mail speeds communication; word processing has virtually eliminated typewriters; computer aided design has rendered the T square and compass obsolete; and computer based training has become a part of the teaching process. It is rather clear that the future will be run by computers. Many companies are now hiring those with computer skills. Even teachers are tested with their computer competencies before they can be accepted for the teaching job. Every business and schools should and will have computers in every desk and knowing what is behind the computer and being able to use one will be essential in order to obtain a job.

Each major technological innovation since the dawn of history has had a major effect on society, transforming or at the least modifying the way people live. In its half a century or so of modern existence, it has changed the way that business does business, made space exploration possible, and nurtured a vast educational enterprise dedicated to imparting computer proficiency.

Yet the computer revolution has only begun. Trying to predict its course is like trying to chart the course of an ocean liner based on its few movements out of port. Worse, the computer revolution is like a ship with no captain.

There are several conflicting views on the impact of computers and information system on people; terms such as computer anxiety and computer

phobia have entered the language. People often fear the unknown and therefore practice avoidance. Even people in the business community who deal with computers on a daily basis may experience some form of cyberphobia-fear of computers. Some people are nervous about the mathematical sound of the word computer. It seems to suggest that only a person with strong analytical and qualitative skills can use the machine. Some people are fearful of the whole environment of computing. The machinery looks intimidating to them. There is a notion that computers are temperamental gadgets and that once a glitch gets into a computer system, it may wreak all kinds of havoc.

Many people are worried about computers in relation to their jobs. Some people doubt they have the skills to find jobs and keep them in the technological labor market of the future. A good many present-day executives whose companies are installing computer terminals in their offices worry about typing-either they do not know how or they are afraid they will lose status if they use keyboard.

Computers have been of great benefit to our society, helping to usher in a new golden age in which people can use computers to lighten their burdens and brighten their lives. Advances in health care, the science, and even the arts, have been fostered by the computer and computerized business community is better able to turn a profit, benefiting everyone.

The maturation of computer has enabled us to take it with us wherever we go. The computer is the constant companion of millions of workers, whether at

the office, in an airplane, or at home. Managers use word processing system to compose memos and to check spelling, grammar and style. Geologists rely on an expert computer system for guidance in the quest for minerals. Sociologists use computers to analyze demographic patterns. Bankers examine up to the minute securities information from their computers. Retailers query their computer system to determine which products are selling and which are not. Meteorologists employ computers to study the formation of tornadoes. Students use computers to encode their reports, make graphics and have their research. Teachers use computers to compose their annual reports, outlines and compute grades.

A new word computer literacy is starting to emerge. The people who talk about computer literacy are insisting that knowledge of computer system is as important as knowledge in basic English and math. Furthermore, these people are saying that any person who does not receive some type of computer related schooling is illiterate and ill prepared to face life.

"Without computer literacy, you are not going to make it in the future", this is according to Cetron of US based forecasting. The ability to access, analyze and evaluate information will be an increasingly vital requisite for full participation as active citizen of the future.

Teachers and students have always used information from a range of sources. Using electronic networks makes the process of locating information more efficient and adds a new dimension to teaching and learning. It is now

possible to make use of and contribute to information from around the world, thereby preparing teachers and students today for the innovations of tomorrow. Access to and appropriate use of technology in schools provide teachers and students with the skills and knowledge that enable them to actively participate in the ever evolving technology centered world of work. People who have a clear understanding of technology and their roles and responsibilities as users are able to engage in a diverse range of technology related workplace situations as life long learners.

Today, technological literacy-computer skills and the ability to use computers and other technology to improve learning, productivity and performance is a new basic that the teachers and students must master. Preparing our children for a lifetime of computer use is now just as essential as teaching them to read and write and do math. Without question, computers have had a profound influence on education in general. More and more schools are purchasing computers for their students. From grade school to doctoral programs, the use of computers in education is on the rise (Long, 1994).

On the side of the government to cope with the fast changing world, the then Department of Education, Culture and Sports (DECS), now the Department of Education (DepEd) began a process of curriculum restructuring at improving the quality of Filipino learners and providing them the necessary skills for lifelong learning. The DECS integrated the Information and Communication Technology

(ICT) in the teaching and learning process, and is, potentially, one of the most viable interventions towards educational reform (Mendoza, 2003)

In elaborating the philosophy of education that informs it, the 2002 Basic Education Curriculum (BEC) enshrines information literacy as a prerequisite for social and economic development: “We have to educate our Filipino learners to filter information critically, seek credible sources of knowledge, and use data and facts creatively so that they can survive, overcome poverty, raise their personal and national esteem, and realize a gracious life in our risky new world.” In view of this goal, the new curriculum provides for the harnessing of the power of ICT as an instructional medium, specifying that ICT be an integral part of the learning areas, wherever hardware and software are available.

Consistent with the goals of the new curriculum, the “Department of Education Information Technology Framework” lays down the action areas for ICT integration in the basic education system. These include multimedia content development, financing and monitoring, evaluation, IT curriculum development, school computerization, and teacher training (DTI, 2006).

To further promote quality education, the school of the future includes areas where administrators, school heads, teachers and students taught the proper usage of computer. With this study in mind, the study attempts to find the computer literacy of the secondary school teachers of Buguias, Benguet Division.

Statement of the Problem

The study on computer literacy of teachers in the secondary schools of Buguias, Benguet Division sought to find the answers to the following questions:

1. What is the level of attainment of the objectives of computer education?

2. What is the level of computer competencies of teachers in terms of Microsoft word, Microsoft excel, Microsoft power point and Internet in the secondary schools of Buguias?

3. Is there is a significant relationship of the socio-professional profile of the respondents to their computer competencies?

4. What is the degree of adequacy of computers in the secondary schools of Buguias?

5. Is there a significant effect of adequacy of computers to the attainment of the objectives?

6. Is there a significant correlation of the computer competencies to the attainment of the objectives?

Objectives of the Study

The objectives of the study are as follows:

1. To determine the level of attainment of the objectives of computer education.

2. To determine the level of computer competencies of teachers in terms of Microsoft word, Microsoft Excel, Microsoft power point, and Internet in the secondary schools of Buguias.

3. To determine if there is a significant relationship of the Socio-Professional profile of the teacher to their computer competencies.

4. To find out the degree of adequacy of computers in the secondary schools of Buguias

5. To determine if there is a significant effect of the adequacy of computers to the attainment of the objectives.

6. To determine if there is a significant correlation of the computer competencies to the attainment of objectives.

Significance of the Study

Computer literacy plays an important role in the quest for excellence in the implementation of a carefully designed program of activities in the curriculum, side by side with the support of the Department of Education, school heads and administrators sharing the same vision and goals.

This undertaking on computer literacy of teachers serves as an evaluation of the level of Buguias Secondary school teachers on being on the information technology era.

This study hopes to give information on how our teachers are coping with the increasing demands of using computers as tools for research, computations,

inventories and recordings. They will also realize the advantages of computer technology in all aspects of their work, such as, computation of grades, communications, lesson plans, and monthly or annual reports.

This study will give insight to school heads, educators as well as students on how knowledge on computers will help them to be effective and efficient in their field of study or specialization.

This will also be an eye opener for school administrators to provide sufficient facilities and inculcate computer knowledge to teachers for the improvement of existing curriculum, better systematic school administering and enhance acquisition of quality education.

Furthermore, the results of this undertaking will give the school authorities an insight on how to continuously maintain quality services through research sharing.

Finally, it is hoped that the results will serve as a wake up call for all teachers to be abreast and attuned to the computer age and to take advantage of what information technology brings.

Scope and Delimitation

This undertaking is delimited to the computer literacy of teachers in the secondary schools of Buguias, Benguet Division.

The problems are confined to the objectives of computer education, their level of computer competencies, and the degree of adequacy of computers, the relationship of the socio-professional profiles to their computer competencies, and the relationship of the adequacy of computers to the attainment of the objectives.

The undertaking was confined to teachers of the various secondary schools of Buguias, Benguet Division during the school year 2006-2007.

## REVIEW OF LITERATURE

History and Development of Computers

The “abacus”, which emerged about 5,000 years ago in Asia Minor and is still in use today, may be considered the first computer. This device allows users to make computations using system of sliding beads arranged on a rack. Early merchants used the abacus to keep trading transactions. It took nearly 12 centuries, however, for the next significant advance in computing devices to emerge. In 1642, Blaise Pascal, the 18 year old son of a French tax collector, invented what he called a numerical wheel calculator. This brass rectangular box, also called a pascaline, used eight movable dials to add sums up to eight figures long (Zwass, 1981).

In 1694, a German mathematician and philosopher, Gottfried Wilhem von Leibniz, improved the pascaline by creating a machine that could also multiply. Like its predecessor, Leibniz’s mechanical multiplier worked by a system of gears and dials.

In the early 19$^{th}$ century, a French weaver named Joseph Marie Jacquard developed a loom that could be programmed. The loom used large cards with holes punched in them to control automatically the pattern that was woven into the material. The punched cards used in Jacquard’s loom were adapted by others

to serve as the primary form of computer input. Punched cards were used to enter both data and programs (Cook, 1998).

The real beginnings of computers as we know today, however, lay with an English mathematics professor, Charles Babbage. He invented the analytical engine, powered by steam and as large as a locomotive. The machine store program and could perform calculations and print results automatically. The analytical engine was the first computer that incorporates punched card input, memory unit and sequential program control.

Herman Hollerith, an American inventor in 1889, also applied the Jacquard loom concept to computing. His first task was to find faster way to compute the US census. Unlike Babbage's idea of using cards to instruct the machine, Hollerith's method used card to store data information which he fed into a machine that compiled the results mechanically. As many as 80 variables could be stored on o single card. In addition to their speed, the punch cards served as a storage method for data and they helped reduce computational errors. Hollerith brought his punch card reader into the business world, founding Tabulating Machine Company in 1896, later to become International Business Machines (IBM) in 1924.

With the onset of the Second World War, governments sought to develop computers to exploit their potential strategic importance. By 1941, German

engineer, Konrad Zuse had developed a computer, the Z3, to design airplanes and missiles. The allied forces, however, made greater strides in developing powerful computers. In 1943, the British completed a secret code-breaking computer called Colossus to decode German messages. The Colossus's impact on the development of the computer industry was rather limited for two important reasons. First, Colossus was not a general purpose computer; it was only designed to decode secret messages. Second, the existence of the machine was kept secret until decades after the war.

Another computer developed spurred by the war was the Electronic Numerical Integrator and Computer (ENIAC). Consisting of 18,000 vacuum tubes, 70,000 resistors and 5 million soldered joints, the computer was such a massive piece of machinery that it consumed 160 kilowatts of electrical power. Developed by John Presper Eckert and John W. Mauchly, ENIAC, is now seen as the first electronic computer. It could perform thousands of calculations per second and was used for a variety of purposes including scientific research, calculating ballistic tables, and weather predictions (La Putt, 1986).

In the mid 1940's, John von Neuman designed the Electronic Discrete Variable Automatic Computer (EDVAC) with a memory to hold both stored program as well as data. This stored memory technique as well as the conditional control transfer that allowed the computer to be stopped at any point and then

resumed, allowed for greater versatility in computer programming. By 1948, the invention of the transistor greatly changed the computer's development. The transistor replaced the large, cumbersome vacuum tube in computers. As a result, the size of electronic machinery has been shrinking ever since. Though transistors were clearly an improvement over vacuum tube, they still generated a great deal of heat, which damage computer's sensitive parts. Jack Kilby, an engineer, developed the integrated circuit (IC) in 1958. As a result, computers became smaller as more components were squeezed onto the chip (Bitter, 1984).

In 1981, IBM introduced its personal computer (PC) for use in the home, office and schools. As computers became more widespread in the workplace, new ways to harness their potential developed. As smaller computers became more powerful, they could be linked together or networked to share memory space, software, information and communicate with each other. These multi-programming of the users led to computer literacy.

A quarter of a century later, we now live in a global village in which computers and people are linked within companies and between countries. The global village is an outgrowth of the computer network. Most existing computers are part of a computer network; that is, they are linked electronically to one or more computers to share resources and information. When we tap into networked computers, we can hold electronic meetings with widely dispersed colleagues,

retrieve information from corporate data base, and even make hotel reservations. Computers today are smaller but more powerful. Execution of programs is faster, disk storage has more capacity and printer speeds are faster.

Computer professionals sometimes use the phrase ubiquitous computing which is everywhere, but they are not talking about computer on a desk type. Ubiquitous computing means that computers are a part of our daily spaces, but not visible to the casual observer. Computers will be invaded in the environment around us, in classroom blackboards, kitchen, floors, and office walls. These feats are physically possible with sophisticated wireless networks.

Today's computers can simulate many human capabilities such as calculating, speaking, remembering, comparing and drawing. Researchers are working to expand these capabilities and, therefore, the power of computers by developing hardware and software that can imitate intelligent human behavior. Artificial intelligence is a field of study that explores how computers can be used for tasks requiring the human characteristics of intelligence, imagination, and intuition. In other words, we would like to be able to interact with computers in ways that assume that they have a more human and less machine nature. To do this, the computer would, at the very least, need to have a knowledge base equivalent to that of the average person and the ability to communicate in natural human language (Long, 1994).

Albert Einstein said that concern for man himself and his fate must always form the chief interest of all technical endeavors. Some people believe that a rapidly advancing information technology exhibits little regard for man himself and his fate. They contend that computers are overused, misused and generally detrimental to society. They argue that computers are dehumanizing and slowly forcing society into a pattern of mass conformity.

Information technology has enhanced our lifestyle to the point that most of us take it for granted. However, we can't passively assume that information technology will continue to enhance the quality of our lives. It is our obligation to learn to understand computers so we can better direct their application for society's benefit. Only through understanding can we control the misuse or abuse of information technology.

Objective of Computer Education

The Philippines recognizes the vital role of information technology in nation building (Reyes, 2000). Technology is the foundation of the country's future economic development (NEDA, 2004).

The growing importance of computer education can be seen in the various computerization programs initiated by government agencies and institutions. Thus, DepEd. initiatives on the use of ICT in education were embedded. Modernization Programme, begun in 1996, involving the introduction and use of

modern technology to improve the teaching and learning process, educational management and support operations in the educational system (Abcede, 2005).

The 1996 General Appropriations Act (GAA) laid the grounds for the provision of IT equipment in public secondary schools, providing the necessary funds for the procurement of hardware and software, teacher training and courseware development. Six hundred sixty-one public secondary schools and more than seven thousand secondary school teachers and principals were benefited.

The Government believes that basic education should evolve and nurture an ICT framework designed to enhance, broaden, strengthen and transform learning to develop the Filipino learner into a person who is excellence-driven, global in perspective, innovative, ingenious and creative, with a deep sense of community and concern for harmony and the common good. Toward this vision, basic education must empower learners, equipping them for the challenges in the new millennium by improving the quality and accessibility of education through the use of appropriate ICT (UNESCO, 2005).

In the medium term, the Philippines aims to become a knowledge center and to achieve its selected market niche in software development and data management, and become the e-services hub in Asia. As such, companies located in the Philippines will be able to extend world-class ICT-related services and ICT-enabled services to clients' worldwide including ICT project management,

application systems development, applications services provision and hosting, web development and management, database design and development, computer networking and data communications, software development, ICT facilities operations/ management, and other services directly tied to the ICT industry. Examples of ICT-enabled services are business process outsourcing, call centers, animation, engineering and design, human resource services, etc. There are also ICT support activities such as research and development of ICT products, training of ICT workers, and establishing incubators for ICT projects which are all considered vital for the long-term goal of promoting ICT in the Philippines. In addition to software development and data management, the Philippines is developing its potential in e-commerce and in web content development. To gain international reputation and recognition, these identified niches have to be enhanced through higher levels of creativity and commitment (NEDA, 2004).

Computer Competencies Required of the Teacher

All people employed as classroom teachers need to develop the skills which enable them to maximize the use of the computer as a teaching resource to enhance student learning and to prepare students to master a high technology society in which lifestyles, attitudes and skills are changed daily (MACQT, 2004).

According to GAA (1996), the introduction and use of modern technology is to improve the educational management and support operations in the educational system. The use of computers in education opens a new era of

knowledge and offers a tool that has the potential to change some existing educational methods. The teacher is the key to the effective exploitation of this resource in the educational system and that the teacher should be computer literate. The webopaedia (1996) defines computer literacy as the level of expertise and familiarity someone has with computers.

For this to be accomplished, teacher education programs and professional development programs for practicing teachers will need to focus on the provision of an understanding of the application of computer knowledge and of both basic and more sophisticated skills associated with computer proficiency.

The basic operational proficiency may be short term needs that need to be addressed to some degree at every level of the teaching and administrative hierarchy. Habits of linear thinking, information gathering, resource production and the structuring of learning environments will face adjustments as the computer increasingly becomes used as a curriculum tool and as a tutor to facilitate student learning.

The schools also felt that teachers needed to accept that computer assisted learning must be integral to modern teaching and this included classroom management. In general the teachers felt that there is no difference in the training needs between the executive and other staff.

While considerable concern has been expressed about the widening gap between student and teacher knowledge and expertise regarding computer

competency, it is generally not considered necessary for all teachers to become experts in all those aspects of the computer technology likely to be used in a school setting. However, some basic proficiency are desirable for all teachers and should be specifically catered for in teacher education, either through direct teaching programs or through systems which assess and remediate the teachers current level of competency. Public concern about teachers and school leaders has sparked a demand for stricter standards and more rigorous controls regarding teacher quality. Society has become global and the expectations for our children are high because they will be forced to compete in a challenging and complex society (Watson, 1998).

Computer Competencies

Microsoft Word. Technically, Microsoft word is considered a word processor. Although it does a superior job at that, it's really so much more than a word processor. Word can create Web pages loaded with hyperlinks, and it can even produce newsletters that would push the capabilities of many small desktop publishing programs. This software-like word processor enables the user to process word, easily insert, delete and move words, sentences and paragraph automatically and also change the appearance of the written material. Later versions of Word have more capabilities. The drawing tool allows simple desktop publishing operations such as adding graphics to documents. Collaboration,

document comparison, multilingual support, translation and many other capabilities have been added over the years (Wikipedia, 2006).

According to an article of the Encarta encyclopedia (2004), Microsoft word or word processor is an application program for manipulating text-based documents; the electronic equivalent of paper, pen, typewriter, and mostly likely, dictionary and thesaurus. Word processors run the gamut from simple through complex, but ease the tasks associated with editing documents. All word processors offer at least limited facilities for document formatting, such as font changes, page layout, paragraph indention, and the like. Some word processors can also check spelling, find synonyms, incorporate graphics, correctly align mathematical formulas, create and print form letters, display documents and enable users to record macros that simplify difficult or repetitive operations.

Microsoft Excel. It is an extensive worksheet, a very powerful and capable worksheet, graphics, and data base software package that can be used to develop and implement a variety of applications on the personal computer.

It is a spreadsheet program designed to create, organize, and analyze data. It is a very powerful tool for day to day business activities such as preparing a simple invoice, making an office form or managing a complex accounting ledger. With Microsoft Excel, these activities have been greatly facilitated (Andes, 2002).

Definitions of Microsoft Excel on the Web. (Online Dictionary, 2006)

Microsoft Excel is a popular computer program that allows you to create and edit spreadsheets which are used to store information in columns and rows that can then be organized and/or processed. Spreadsheets are designed to work well with numbers but often include text.

Microsoft excel or spreadsheet is an application program commonly used for budgets, forecasting, and other finance related tasks. In a spreadsheet program, data and formulas to calculate those data are entered into ledger like forms for analysis, tracking, planning, or proposed changes on an economic strategy. To ease computation, these programs include built in functions that perform standard calculations. Working with Microsoft excel eliminates much of the toil of setting up a manual spreadsheet. The Microsoft excel software automatically does all the calculation and produces the results. The software does not make any calculation errors, and if a copy of the spreadsheet is needed, it can be done quickly. The spreadsheet can be saved and can be used again.

Microsoft Excel is a spreadsheet program written and distributed by Microsoft for computers using Microsoft windows operating system. It features an intuitive interface and capable calculation and graphing tools which, along with aggressive marketing have made Excel one of the most popular microcomputer applications to date.

Definition of Microsoft Power Point on the Web: (Online Dictionary, 2006)

Microsoft power point is a popular presentation program developed for the Microsoft windows computer operating systems. Being widely used by business people, educators, and trainers, it is among the most prevalent forms of persuasion technology. Microsoft power point is an effective tool in presenting data and information and used by administrators to present and communicate plans to their subordinates in a conference or meeting.

According to Office Automation (1998), as cited by Padya-os (2005), the best presentations use visuals to communicate faster at a deeper level than spoken words; therefore, images such as graphs, chart illustrations, and photos should be used to highlight important messages and attract audiences attention for them to remember key points given. Presentation graphics increase the impact of your message. They make the information presented visually appealing, meaningful, and comprehensible.

These presentations are alive and leader controlled and allows dispersed individuals to actively participate in the real time presentation from their desktop via the internet. Microsoft power point generates and sustains the interest of an audience by brightening up any lessons, report, or business documents. In addition, power point can help get a point across by presenting an overwhelming amount of data in one simple, clear graph. Most people use Microsoft power point for two reasons: to view and analyze data and to make a positive impression

during a presentation. According to Microsoft Corporation, some 30 million presentations are made with power point every day.

Internet. It is a computer-based global information system. The Internet is composed of many interconnected computer networks. Each network may link tens, hundreds, or even thousands of computers, enabling them to share information with one another and to share computational resources such as powerful supercomputers and databases of information. The Internet has made it possible for people all over the world to communicate with one another effectively and inexpensively. Unlike traditional broadcasting media, such as radio and television, the Internet does not have a centralized distribution system. Instead, an individual who has Internet access can communicate directly with anyone else on the Internet, make information available to others, find information provided by others, or sell products with a minimum overhead cost. (Freeze, J.T., 1998).

Definition of Internet on the Web: (Online Dictionary, 2006)

The internet, or simply the Net, is the publicly available worldwide system of interconnected computer networks that transmit data by packet switching using a standardized internet protocol (IP) and many other protocols. It is made up of thousands of smaller commercial, academic, domestic and government networks. It carries various information and services, such as electronic mail, online chat and interlinked web pages and other documents on the World Wide Web.

A global network connects millions of computers. More than 100 countries are linked into exchanges of data, news and opinions. Unlike online services which are centrally controlled, the internet is decentralized by design. Each internet computer called a host is independent. Its operators can choose which internet services to use and which local services to make available to the global internet community. Remarkably, this anarchy by design works is exceedingly well.

A worldwide network of computers can be accessed via the campus computer network. The internet allows local computer users to find and use databases on computers of other academic institutions, research institutes, private companies and government agencies.

Related Studies

Capron (1990) found that computer education is a necessity and not a novelty. According to McCannon and Crews (2000) as cited by Asan (2003), as computer use continues to increase in society, educators must also prepare for the use of computers within the classroom. In addition, Sangeeta (2006) said that computers have become a vastly popular household item that the young people's lives are already getting influenced by the technology. Further, he said that computer education has become a compulsory subject in schools and that young teachers have taken computer subjects making them competent in the software. According to Alatalo (1999), younger person tends to use new technologies.

Pladio (2001) as cited by Padya-os (2005), said that teachers are less exposed to technologies or programs. Moreover, he said that if teachers are less exposed to these technologies, their computer competency will be affected. Krysa (1998) found that accessibility to the technology is limited.

Padya-os (2005) proved in his study on the computer competency of head teachers that the heads are less competent in Microsoft word and Microsoft excel and not competent in Microsoft power point and internet.

Marwick (2002) and Wikipedia (2005) as cited by Pad-yaos (2005), revealed in their study that the older the person, the lesser the probability that he will use modern technology.

Office Automation (1998) as cited by Padya-os (2005), claims that the best presentations use visuals to communicate faster at a deeper level than spoken words; therefore, images such as graphs, chart illustrations, and photos should be used to highlight important messages and attract audiences attention for them to remember key points given.

According to Hoy and Miskel (2001), as cited by Padya-os (2005), that experience is a central criterion in determining job performance of professionals and managerial employees.

Hamilton (2005) found in his study that older people appear to be better and faster at grasping the big picture than their younger counter parts.

Elliot et al. (1996) as cited by Padya-os (2005), say that computer is used to manage school records pertaining to students, teachers and curriculum.

Harris and Hartman (2002), as cited by Padya-os (2005), assert that computer is relevant in the fast changing world in terms of planning, communication, research, and education.

Edward and Roblyer (2000) as cited by Padya-os (2005), claim that information technology-oriented educators and technology experts review the full benefits of the technology's potentials to improve teaching, learning and productivity in a school level.

According to Tokoyen (2002) as cited by Buloguey (2005), one factor which hinders teachers from pursuing their studies could be their family since the majority of the respondents are married. However, Filipino teachers must face up the challenge to update their conceptual competence.

Guerero (1989) as cited by Goygoyan (2006), stressed that quality of education is said to be dependent upon the quality of teachers, supervisors, and administrators that the system employs. One of the qualities of teachers is then academic and professional training and/or advancement.

According to Buloguey (2005), few attend the national and regional seminars and trainings, only those who had higher positions are given opportunities to attend. One reason for this situation is lack of financial assistance

which is needed in order to join such trainings and seminars since these are not free.

Teachers have indicated frustrations that they don't have sufficient time for computer use (Asan, 2003).

Conceptual Framework

The paradigm shows the interrelationship between the independent variables and dependent variables as indirectly affected by the intervening variables (Figure 1)

The independent variables involve the objectives of computer education, the teacher's computer competencies in terms of Microsoft word, Microsoft excel, Microsoft Power point and Internet and the adequacy of computers.

The dependent variables focus on the level of attainment of objectives in this research as either fully attained (2.50-3.00), moderately attained (1.50-2.49) and not attained (1.00-1.49); the level of computer competencies, as either very competent (2.50-3.00), competent (1.50-2.49) and not competent (1.00-1.49); and the degree of adequacy of computers as very adequate (2.50-3.00), adequate (1.50-2.49), and inadequate (1.00-1.49)

The socio-professional profile of the secondary school teachers, such as age, gender, civil status, educational attainment, training and seminars attended and years of work experience are the intervening variables.

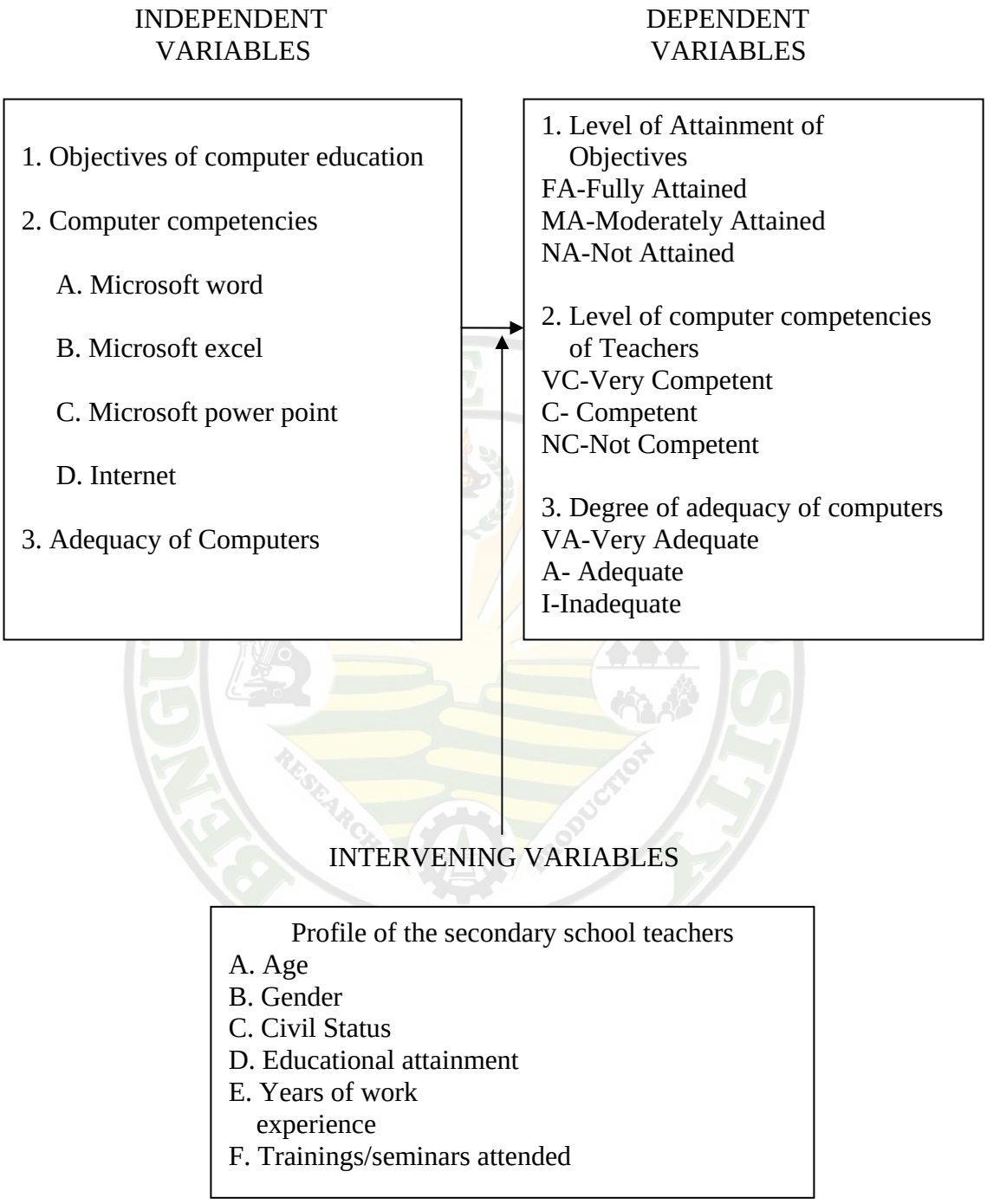



Figure 1. A paradigm showing the relationship of the variables of the study

The above cited concepts are strengthened by the paradigm of the study as illustrated. The paradigm consists of independent variables, intervening variables and dependent variables.

Definition of Terms

The following terms are defined as used in the study.

Computer literacy. (Wikipedia) This term refers to the ability to use computers competently and to understand computer terminology. It includes the competency of a person, the awareness of computers, knowledge about computers, and interaction with computers.

(Webopaedia ) This term refers to the level of expertise and familiarity someone has with computers, generally, the ability to use application rather than to program.

Literacy. (Encarta Dictionary Tools) This term refers to the skill, knowledge of or training in a particular subject or area of activity. It also refers to the ability of a person to read and write in a competent level.

(Funk and Wadnalls) This term refers to the person having a knowledge of letters or literature.

Computer. (Wikipedia) This term refers to the machine that performs tasks, such as calculations or electronic communication under the control of a set of instructions called a program. Programs usually reside within the computer and are retrieved and processed by the computer's electronics. The program results are

stored or routed to output devices such as video display monitors or printers. Computers perform a wide variety of activities reliably, accurately, and quickly.

(Funk and Wagnalls) This term refers to a power driven machine equipped with keyboards, electronic circuits, storage compartments and recording devices for the high speed performance of mathematical operations.

Computer education. This term refers to the imparting and acquiring of knowledge through the use of computer.

Competency. (Encarta Dictionary Tools) This term refers to the ability to do something well, especially measured against a standard.

(Funk and Wagnalls) This term refers to having sufficient ability or authority or possessing the requisite natural or legal qualifications.

Computer competencies. This term refers to the knowledge, ideas and skills that pertain to computer hardware's and software's such as Microsoft word, Microsoft excel Microsoft power point and Internet. The level of competency may be classified as very competent, competent, and not competent.

Level of Computer Competencies. This term refers to the knowledge, ideas, and skills that pertain to computer hardwares and softwares such as Microsoft word, Microsoft excel Microsoft power point, and Internet. The level is classified either as very competent (with numerical values ranging from 2.5-3.0), competent (with numerical values ranging from 1.5-2.49) and not competent (with numerical values ranging from 1.0-1.49).

Adequacy. (Encarta Dictionary Tools) This term refers to the sufficiency in quality or quantity to meet a need or qualify for something.

Adequacy of computer. This term refers to the availability of computer units or quantity to meet a need or qualify for something. The degree is classified as very adequate, moderately adequate, or inadequate.

Degree of adequacy of computers. This term refers to the number of computer units, computer to user ratio and time usage of computer in the secondary schools of Buguias, Benguet. This may be very adequate (with numerical values ranging from 2.5-3.0), adequate (with numerical values ranging from 1.5-2.49), and inadequate (with numerical values ranging from 1.0-1.49).

Objectives. (Encarta Dictionary Tools) This term refers to a description of a performance you want learners to be able to exhibit before considering them competent. These also refer to the knowledge, skills or attitudes taught in a course that contribute to mastering a specific competency. This term describes an intended result of instruction rather than the process of instruction itself.

Level of Attainment of Objectives. This term refers to the accomplishment of a performance in computer education. This may be fully attained (with numerical values ranging from 2.5-3.0), moderately attained (with numerical values ranging from 1.5-2.49), and not attained (with numerical values ranging from 1.0-1.49).

Attainment. (Encarta Dictionary Tools) This term refers to the accomplishment of something or the achievement of the goals that somebody has set.

(Funk and Wagnalls) This term refers to achieving, accomplishing or gaining, as a desired purpose or state.

Socio-professional profile. This term refers to the significant data and information about the secondary school teachers such as age, gender, civil status, educational attainment, years of work experience, and trainings/seminars attended.

Civil Status. This term refers to the person or the classification of the respondents as to whether they are either married or single.

Age. (Encarta Dictionary Tools) This term refers to the length of time that somebody or something has existed, usually expressed in years. It also refers to one of the stages or phases in the lifetime of somebody or something.
This term also refers to the secondary school teachers' age range of 21-65 years. It is categorized into the following: 21-30 years old, 31-40 years old, 41-50 years old and 51 years old and above.

(Funk and Wagnalls) This term refers to the period or stage of life as measured by the time already or previously passed.

Gender. (Encarta Dictionary Tools) This term refers to the sex of a person or organism or of a whole category of people or organisms.

(Funk and Wagnalls) This term refers to animate beings either masculine of feminine.

Educational Attainment. This term refers to the educational accomplishment of a person. It is classified as bachelors' degree, masters' degree, and doctorate degree.

Years of work experience. This term refers to the length of service of a person in the teaching profession. It is grouped from 1-5 years, 6-10 years, 11-15 years and 16 years and above.

Trainings and seminars attended. This term refers to the trainings and seminars attended by a person. Trainings and seminars are grouped into national level, regional level, local level, and others.

## Hypotheses of the Study

The following hypotheses were put forward for testing:

1. There is no significant difference in the level of attainment of the objectives of computer education.

2. There is no significant difference in the level of computer competencies of teachers in terms of Microsoft word, Microsoft excel, Microsoft power point and Internet in the secondary schools of Buguias.

3. There is no significant relationship of the socio-professional profile of teachers to their computer competencies.

4. There are no significant differences in the degree of adequacy of computers in the secondary schools of Buguias.

5. There is no significant effect of the adequacy of computers in the attainment of the objectives.

6. There is no significant correlation of computer competencies to the attainment of the objectives.

## METHODOLOGY

Locale and Time of the Study

This study was conducted during the first semester of the school year 2006-2007 in the secondary schools of Benguet, Particularly in the District of Buguias namely; Benguet State University-Buguias Campus, Buguias National High School-Main, Buguias National High School-Bot-oan Extension, Buguias National High School-Loo Extension, Sinipsip National High School-Main and Sinipsip National High School-Bangao Extension. Figure 2 shows the location of the study.

Respondents of the Study

The respondents of the study are concentrated on the secondary school teachers of Buguias, Benguet Division. There are ninety six secondary school teachers involved in the six schools. Table 1 shows the distribution of the study.

Data Gathering Instrument

A questionnaire was constructed to collect information on the computer literacy of secondary school teachers of Buguias, Benguet Division. The questionnaire contain questions that elicit their socio-professional profile in terms of age, gender, civil status, educational attainment, years of teaching, and number of trainings and seminars attended, the level of attainment of the objectives of computer education, the level of computer competencies in terms of Microsoft

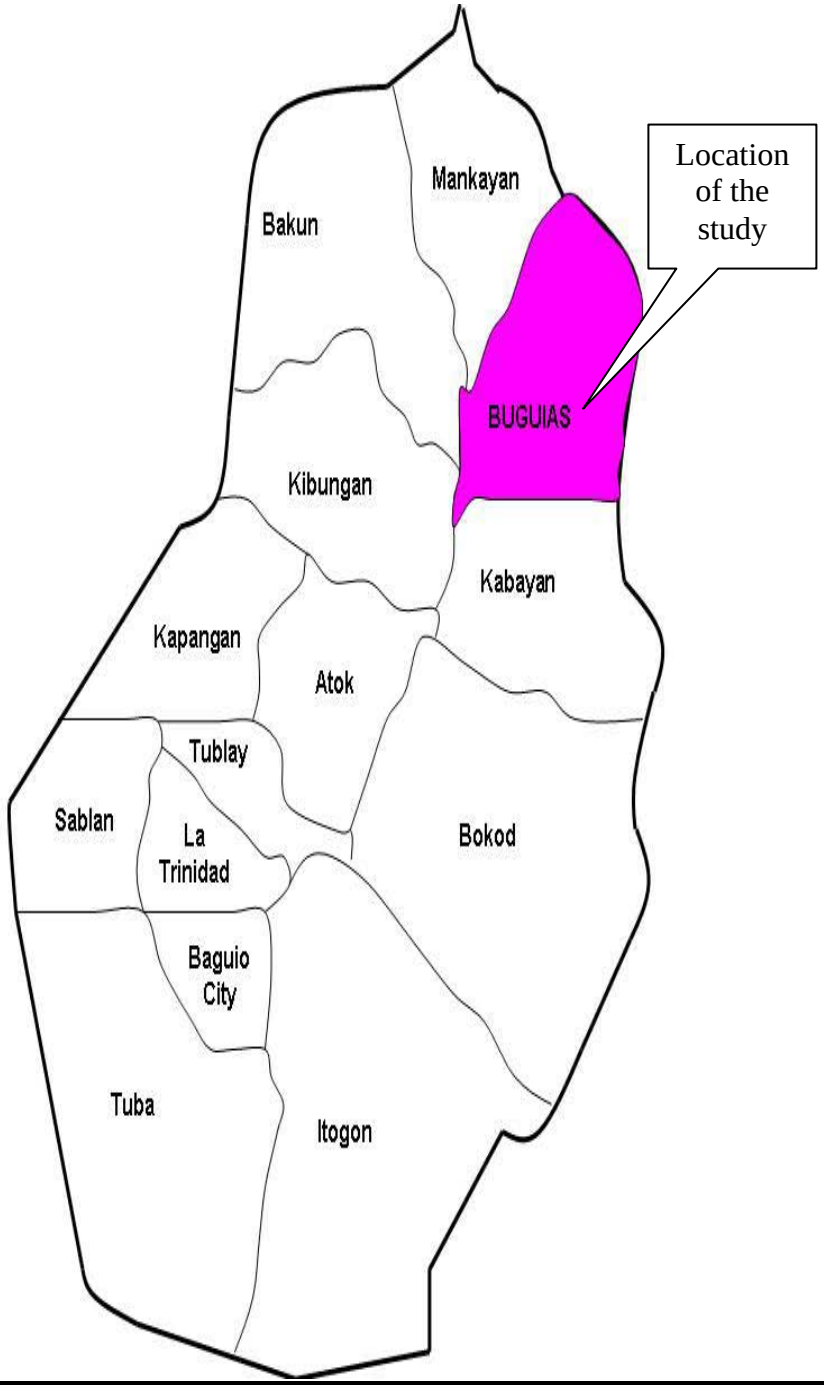



Figure 2. Map of the Province of Benguet showing the location of the study

Table 1. Socio-professional profile of the secondary school teachers of Buguias, Benguet.

| GENDER | FREQUENCY | PERCENTAGE |
|---|---|---|
| Male | 25 | 26.04 |
| Female | 71 | 73.96 |
| **Total** | 96 | 100.00 |

| CIVIL STATUS | FREQUENCY | PERCENTAGE |
|---|---|---|
| Married | 75 | 78.13 |
| Single | 21 | 21.87 |
| **Total** | 96 | 100.00 |

| AGE | FREQUENCY | PERCENTAGE |
|---|---|---|
| 21-30 years old | 38 | 39.58 |
| 31-40 years old | 24 | 25 |
| 41-50 years old | 22 | 22.92 |
| 51 and above | 12 | 12.5 |
| **Total** | 96 | 100.00 |

| HIGHEST EDUCATIONAL ATTAINMENT | FREQUENCY | PERCENTAGE |
|---|---|---|
| Bachelors Degree | 64 | 66.67 |
| Masters Degree | 28 | 29.17 |
| Doctorate Degree | 4 | 4.17 |
| **Total** | 96 | 100.01 |

| YEARS OF TEACHING EXPERIENCE | FREQUENCY | PERCENTAGE |
|---|---|---|
| From 1-5 years | 36 | 37.5 |
| From 6-10 years | 25 | 26.04 |
| From 11-15 years | 10 | 10.42 |
| From 16 years and above | 25 | 26.04 |
| **Total** | 96 | 100.00 |

| LEVEL OF TRAININGS | NUMBER OF LEVEL OF TRAININGS | PERCENT | NUMBER OF TRAININGS | PERCENT |
|---|---|---|---|---|
| National | 7 | 6.09 | 12 | 6.19 |
| Regional | 12 | 10.43 | 25 | 12.89 |
| Division | 52 | 45.22 | 148 | 76.29 |
| Others | 7 | 6.09 | 9 | 4.63 |
| None | 37 | 32.17 | 0 | 0 |
| **Total** | 115 | 100.00 | 194 | 100.00 |

word, Microsoft excel, Microsoft power point, and Internet, and the degree of adequacy of computers in the secondary schools of Buguias, Benguet.

Data Gathering Procedure

The researcher sought personally the permission and help of the superintendent of the Division Office of the Department of Education and the different heads of the secondary schools of Buguias, Benguet. During the meeting of the secondary school heads, the researcher personally gave the questionnaire to the heads of the different institutions who distributed them to their school teachers. Some questionnaires were distributed personally to some school heads in their respective schools. The researcher also interviewed some respondents who preferred this mode in their sharing of ideas and opinions.

Statistical Analysis

The data that were gathered were summarized and analyzed using both descriptive and inferential statistics. The descriptive statistics used are percentages, frequency counts and weighted mean. To answer the hypotheses, the chi-square ($X^2$), the t-test using the one-way analysis of variance and the spearman's coefficient of correlation by ranks were used. The 0.05 level of significance was the basis in accepting or rejecting the hypotheses.

## RESULTS AND DISCUSSIONS

This part of the study reveals the results of all the data and information as tabulated in accordance with the specific problems or objectives of this research. Firstly, the level of attainment of the objectives of computer education is presented followed by the level of computer competencies in terms of Microsoft word, Microsoft Excel, Microsoft Power point and Internet. The relationship of the socio-professional profile of the teachers to their computer competencies, degree of adequacy of computers in the secondary schools of Buguias, the effect of the adequacy of computers to the attainment of objectives and the correlation of the computer competencies to the attainment of objectives.

Attainment of the Objectives
of Computer Education.

Table 2 presents the responses of the secondary school teachers about the attainment of the objectives of computer education.

It is shown in the table that objective one has the highest weighted mean of 2.125. This is followed by objective four with 1.990 weighted mean, objective three with 1.979 weighted mean, objective five with 1.896 weighted mean, and objective two with a weighted mean of 1.1990.

The respondents found the objectives of computer education as moderately attained, indicated by the average weighted mean of 1.996.

Table 2. Level of attainment of the objectives of computer education.

| OBJECTIVES | WM | DE | |
|---|---|---|---|
| 1. To create documents and to retrieve and communicate needed information effectively and efficiently. | 2.125 | MA | |
| 2. To acquire a basic core of skills that is needed to research information with the use of information technology. | 1.1990 | MA | **$t_c$ = 2.31** |
| 3. To participate actively in one's profession not only to co-workers in the workplace but also to other professionals around the world. | 1.979 | MA | **$t_{.05}$ = 2.571** |
| 4. To develop the personal and work special skills of learners especially their interpersonal skills, vocational skills, problem solving and decision making in daily life. | 1.990 | MA | Not significant |
| 5. To enhance disposition of learners for life long learning and continues professional development. | 1.896 | MA | |
| **Average Weighted Mean** | 1.996 | MA | |

**Legend:**

| | |
|---|---|
| FA (3) = Fully Attained | 2.50 – 3.00 |
| MA (2) = Moderately Attained | 1.50 – 2.49 |
| NA (1) = Not Attained | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

The weighted mean of each objective is computed using the t-test. The computed t-value of 2.31 is lower than the t-value at the .05 level of significance. Hence, the hypothesis that the level of attainment of the objectives of computer education does not differ significantly is accepted.

This result suggests that all the schools have their own computer laboratory and that they have achieved some of the objectives. Another reason could be that some teachers have their own computer which helped them in

attaining the objectives of computer education. Another reason for the result could be that some teachers have attended trainings and seminars regarding the new technology. Finally, the result could be attributed to the idea of MACQT (2004) that computers is already integrated in the educational curriculum and that every teachers need to develop the skills which enable them to maximize the use of computer as a teaching resource to enhance student learning. The findings is in harmony with what Capron (1990) found; that computer education is a necessity, and not a novelty. According to McCannon and Crews (2000), as cited by Asan (2003), as computer use continues to increase in society, educators must also prepare for the use of computers within the classroom.

Level of Computer Competencies in Terms of Microsoft word, Microsoft excel, Microsoft Power Point and Internet

Microsoft Word. Table 3 shows the weighted mean and descriptive equivalent of Microsoft word. As a whole, the respondents are competent, as indicated by the average weighted mean of 1.745. The weighted mean of each activity under the Microsoft word is computed using the t-test. The computed t-value, 86.15 is higher than the t-value at 0.05 level of significance which is 2.447. Hence, the hypothesis that the level of computer competencies of teachers differ significantly is accepted.

Table 3. Level of computer competencies in terms of Microsoft Word.

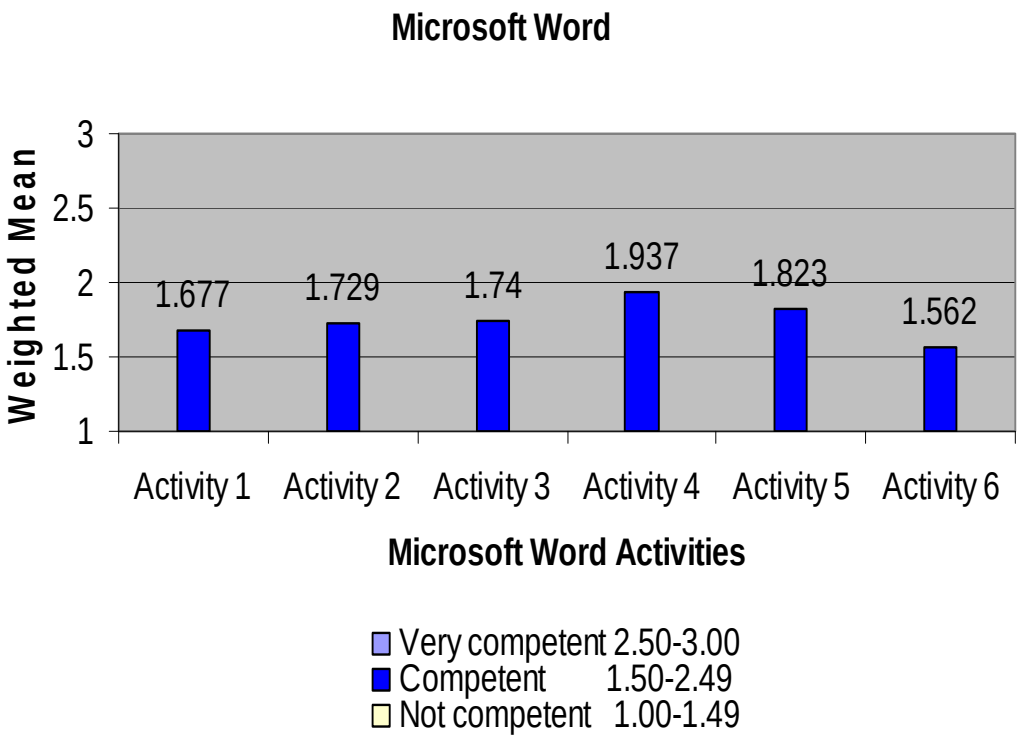
| MICROSOFT WORD | WM | DE | |
|---|---|---|---|
| 1. Encoding documents (Lesson outlines, grading sheets, reports) | 1.677 | C | |
| 2. Lay outing documents | 1.729 | C | $t_c = 86.15$ |
| 3. Importing graphics and inserting pictures | 1.740 | C | |
| 4. Editing documents | 1.937 | C | $t_{.05} = 2.447$ |
| 5. Working with tables | 1.823 | C | |
| 6. Making illustrations with graphical programs | 1.562 | C | Significant |
| **Average Weighted Mean** | 1.745 | C | |

**Legend:**

| | | |
|---|---|---|
| VC | (3) = Very Competent | 2.50 – 3.00 |
| C | (2) = Competent | 1.50 – 2.49 |
| NC | (1) = Not Competent | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

Figure 3. Graphical presentation of Microsoft Word.



The respondents are competent in the activities related to Microsoft word. This result is attributed to the fact that most of the respondents use computers to compose their monthly and annual reports, lesson plans, records, examinations, outlines and compute grades which show that they are exposed to the new technology. It can also be attributed to age, since most of the respondents are young teachers and they have computer subjects when they were in their under graduate course. Sangeeta (2006) said that computers have become a vastly popular household item that the young people's lives are already getting influenced by the technology.

Microsoft Excel. Table 4 shows the weighted mean and descriptive equivalent of Microsoft Excel. The secondary school teachers are competent in the use of Microsoft excel as indicated by the average weighted mean of 1.642. The weighted mean of the activities under the Microsoft excel is computed using the t-test. The computed t-value, 113.29 is higher than the t-value at 0.05 level of significance which is 2.447. Hence, the hypothesis that the level of computer competencies of teachers differ significantly is accepted.

The reason for the result is that most respondents are young teachers and uses Microsoft excel in the computation of the students grades, making of grading sheets, statistics and the likes on their work. According to Sangeeta (2006), that computer education has become a compulsory subject in schools and that young teachers have taken computer subjects making them competent in the software.

Table 4. Level of computer competencies in terms of Microsoft Excel.

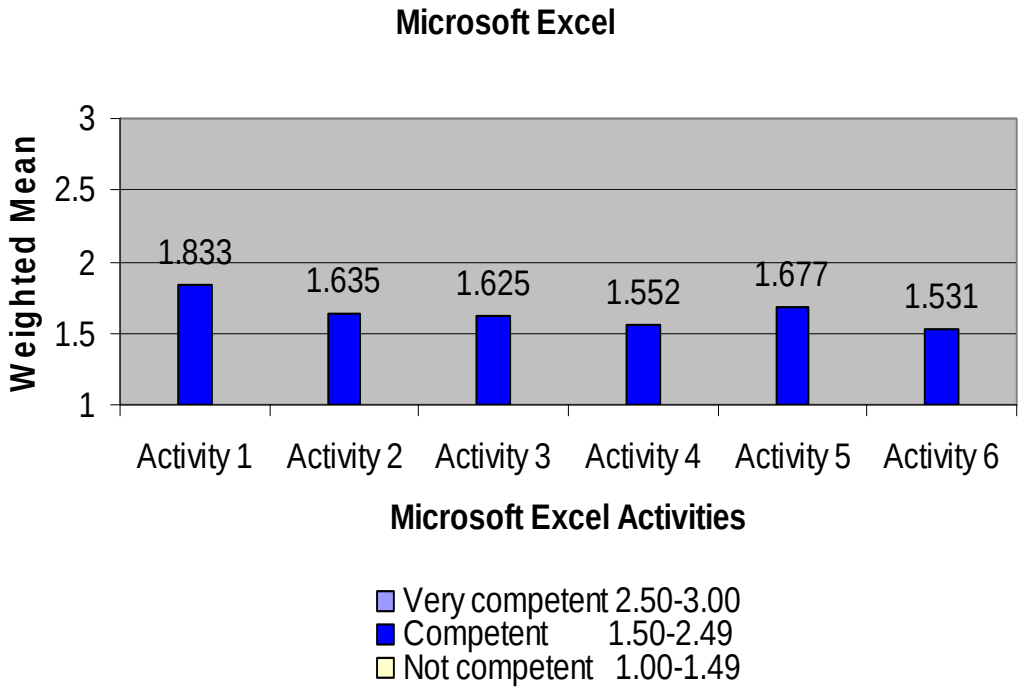
| MICROSOFT EXCEL | WM | DE | |
|---|---|---|---|
| 1. Encoding documents in a worksheets (Grading sheets, graphical data presentation) | 1.833 | C | |
| 2. Formatting a worksheet | 1.635 | C | $t_c$ = 113.29 |
| 3. Editing a worksheet | 1.625 | C | |
| 4. Entering formulas and functions | 1.552 | C | $t_{.05}$ = 2.447 |
| 5. Inserting clip arts and pictures | 1.677 | C | |
| 6. Creating charts | 1.531 | C | Significant |
| **Average Weighted Mean** | 1.642 | C | |

**Legend:**

| | | |
|---|---|---|
| VC | (3) = Very Competent | 2.50 – 3.00 |
| C | (2) = Competent | 1.50 – 2.49 |
| NC | (1) = Not Competent | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

Figure 4. Graphical presentation of Microsoft Excel.



Another reason for the result could be, according to Alatalo (1999), is that younger person tend to use new technologies.

Microsoft Power Point. Table 5 shows the weighted mean and descriptive equivalent of Microsoft power point. As a whole, the respondents are not competent as indicated by the average weighted mean of 1.471. Nevertheless they are competent in creating slide show, but not competent in the other activities related to Microsoft power point. The weighted mean of each activity under the Microsoft power point is computed using the t-test. The computed t-value, 1003.79 is higher than the t-value at 0.05 level of significance which is 2.776. Hence, the hypothesis that the level of computer competencies of teachers differ significantly is accepted.

Table 5 shows that the secondary school teachers are not competent in Microsoft power point because they don't use Microsoft power point in their teaching since it would need a projector and widescreen in order for the students to see the presentation. Another reason is that the secondary school teachers are not interested or have no time to learn the software since they cannot adopt it in their methods and techniques of teaching.

The result supports the findings of Pladio (2001) as cited by Padya-os (2005), that as teachers are less exposed to these technologies or programs, their computer competencies will be affected.

Table 5. Level of computer competencies in terms of Microsoft Power Point.

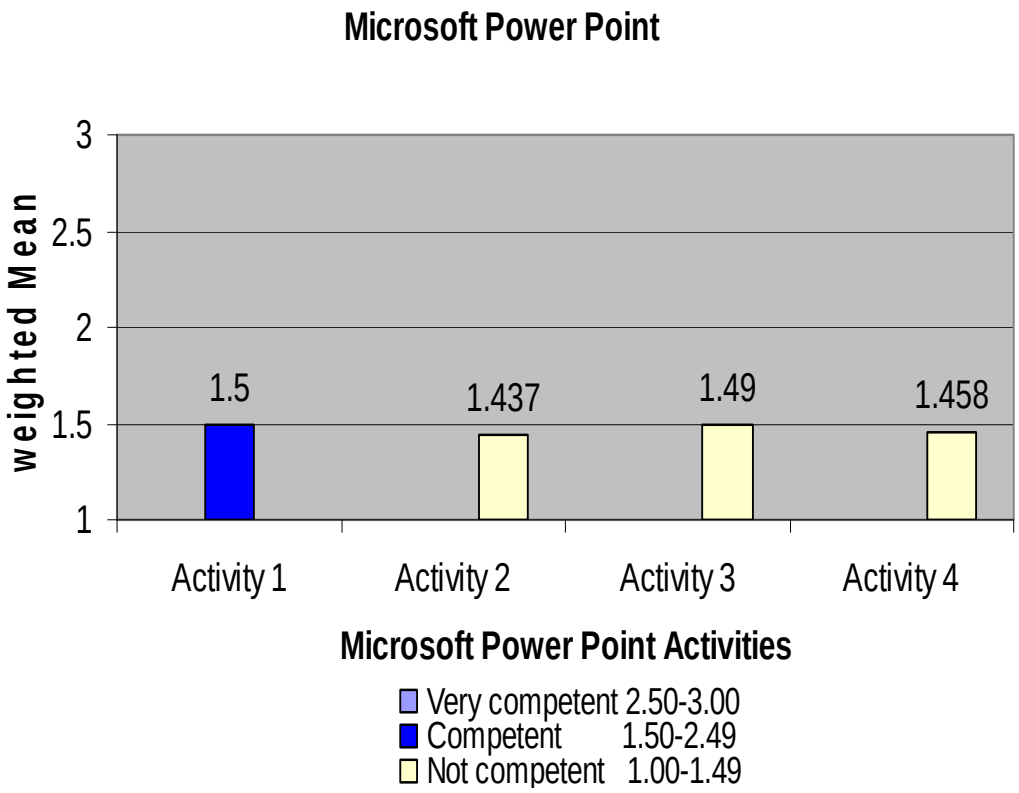
| MICROSOFT POWER POINT | WM | DE | |
|---|---|---|---|
| 1. Creating a slide show | 1.5 | C | |
| 2. Creating slide with graphs and charts | 1.437 | NC | $t_c = 1003.79$ |
| 3. Adding and formatting text | 1.490 | NC | $t_{.05} = 2.776$ |
| 4. Creating animated slides | 1.458 | NC | |
| **Average Weighted Mean** | 1.471 | NC | Significant |

**Legend:**

| | | |
|---|---|---|
| VC | (3) = Very Competent | 2.50 – 3.00 |
| C | (2) = Competent | 1.50 – 2.49 |
| NC | (1) = Not Competent | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

Figure 5. Graphical presentation of Microsoft Power Point.



Internet. Table 6 reveals the level of computer competencies of the secondary school teachers in Internet. In general they are not competent as indicated by the over-all weighted average of 1.429. The weighted mean of the activities under Internet is computed using the t-test. The computed t-value of 310.33 is higher than the t-value at 0.05 level of significance which is 2.571. Hence, the hypothesis that the level of computer competencies of teachers differ significantly is accepted.

The result shows that the secondary school teachers do not know how to manipulate the internet. A reason for the result is Internet is new in the area of the study. Another reason is that there is only one internet satellite installed in the area of the study and it cannot relay signals to far flung secondary schools of Buguias.

This also supports the observation of Krysa (1998) as cited by Padya-os (2005), that accessibility to the technology is limited.

The result of the study agrees with the findings of Padya-os (2005) that school heads are less competent in Microsoft word and Microsoft excel and not competent in Microsoft power point and Internet.

Relationship of the Socio-Profile of the
Teachers to Their Computer Competencies

This portion of the study presents how some selected variables correlate with the teachers' computer competencies. These selected variables are gender,

Table 6. Level of computer competencies in terms of Internet.

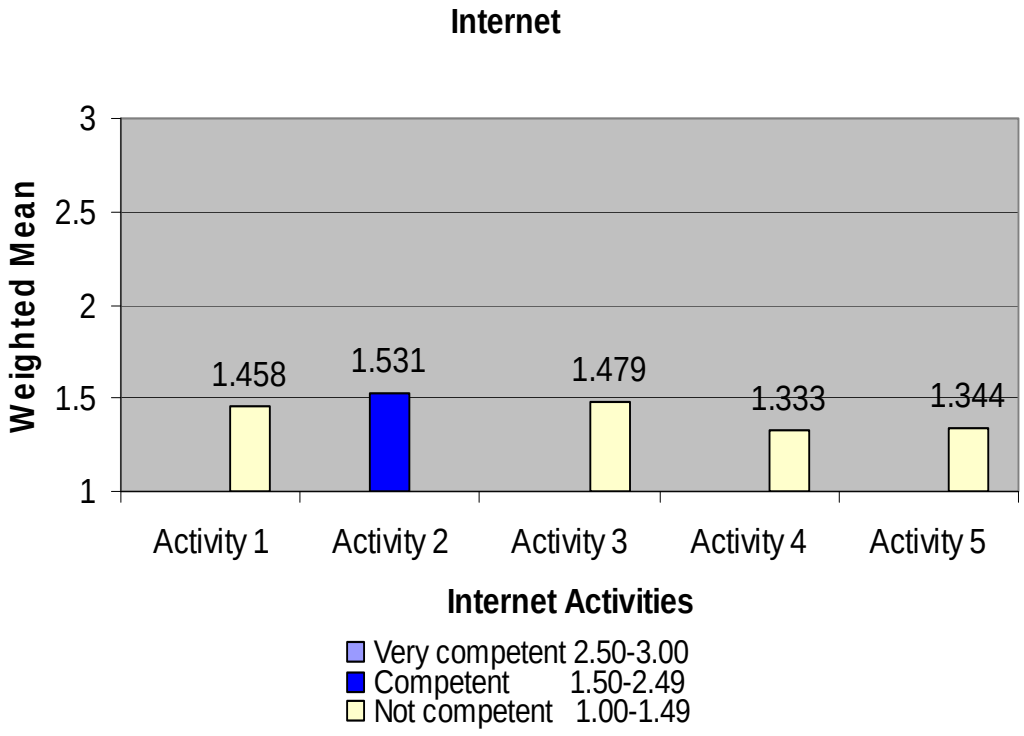
| INTERNET | WM | DE | |
|---|---|---|---|
| 1. Web searching | 1.458 | NC | |
| 2. Internet surfing | 1.531 | C | $t_c = 310.33$ |
| 3. E-mail | 1.479 | NC | |
| 4. On line chatting | 1.333 | NC | $t_{.05} = 2.571$ |
| 5. Downloading | 1.344 | NC | |
| **Average Weighted Mean** | 1.429 | NC | Significant |

**Legend:**

| | | |
|---|---|---|
| VC | (3) = Very Competent | 2.50 – 3.00 |
| C | (2) = Competent | 1.50 – 2.49 |
| NC | (1) = Not Competent | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

Figure 6. Graphical presentation of Internet.



civil status, age, number of years in teaching, educational attainment and trainings/seminars attended.

Gender

Table 7 presents the relationship of gender to the teachers' computer competencies. It is shown in the table that the male respondents are competent in Microsoft word, Microsoft excel, Microsoft power point and internet while the female respondents are competent in the Microsoft word and Microsoft excel but not competent in the Microsoft power point and Internet. The calculated chi-square is less than the tabular value at 0.05 level of significance. Therefore, the hypothesis, that there is no significant relation between the gender of the secondary school teachers and the level of their computer competencies is

Table 7. Relationship of gender of the teachers to their computer competencies.

| COMPUTER COMPETENCIES | MALE | | FEMALE | | |
|---|---|---|---|---|---|
| | W.M. | D.E. | W.M. | D.E. | |
| Microsoft word | 1.807 | C | 1.826 | C | |
| Microsoft Excel | 1.567 | C | 1.667 | C | $X_c^2 = 0.0147$ |
| Microsoft Power Point | 1.510 | C | 1.465 | NC | $X^2_{0.05} = 7.815$ |
| Microsoft Internet | 1.584 | C | 1.393 | NC | |
| **AVERAGE WEIGHTED MEAN** | 1.617 | C | 1.588 | C | Not significant |

**Legend:**

VC (3) = Very Competent 2.50 – 3.00
C (2) = Competent 1.50 – 2.49
NC (1) = Not Competent 1.00 – 1.49

WM = Weighted Mean
DE = Descriptive Equivalent

accepted. Thus, it may be inferred that gender is not the determining factor for the computer competencies of the secondary school teachers.

This result is attributed to the fact that most of the female respondents are married and they give more time to their family rather than practicing the computer software while the male respondents are more competent since they are more career minded and they are expected to be the bread winner in the family. Thus, they have to learn about the new technology to produce quality work. The result can also be attributed to the limited number of computer units in the school making it difficult for the married female respondents to have easy access to the computers. It can also be attributed to the claim of the respondents that they lack trainings or seminars related to computer.

The result corroborates with the findings of Pladio (2001) as cited by Padyaos (2005) that if teachers are less exposed to these technologies, their computer competency will be affected.

Civil Status

Table 8 shows that civil status does not significantly relate to computer competencies. The calculated chi-square is less than the tabular value at level 0.05 level of significance. Therefore, the hypothesis, there is no significant relationship between the civil status of secondary school teachers and their level of computer competencies is accepted. Thus, the civil status is not the determining factor for the secondary school teachers' computer competency.

Table 8. Relationship of the civil status of the teachers to their computer competencies

| COMPUTER COMPETENCIES | MARRIED | | SINGLE | | |
|---|---|---|---|---|---|
| | W.M. | D.E. | W.M. | D.E. | |
| Microsoft word | 1.789 | C | 1.936 | C | |
| Microsoft Excel | 1.593 | C | 1.809 | C | $X_c^2 = 0.0019$ |
| Microsoft Power Point | 1.453 | NC | 1.553 | C | $X^2_{0.05} = 7.815$ |
| Microsoft Internet | 1.405 | NC | 1.562 | C | |
| **AVERAGE WEIGHTED MEAN** | 1.56 | C | 1.715 | C | Not Significant |

**Legend:**

VC (3) = Very Competent 2.50 – 3.00
C (2) = Competent 1.50 – 2.49
NC (1) = Not Competent 1.00 – 1.49

WM = Weighted Mean
DE = Descriptive Equivalent

Table 8 also shows that the single respondents are competent in the Microsoft word, Microsoft excel, Microsoft power point and Microsoft internet software while the married respondents are competent in the Microsoft word and Microsoft excel software and not competent in the Microsoft power point and Internet software.

This result is attributed to the fact that most of the respondents are single and have more time to explore new trends of modern technology. The single respondents have more time to devote themselves in their work and they have more chances of any hands on trainings that would help them in their function

while married respondents have their family as their first priority. Thus, they hardly get updated about computers and computer related technologies. It can also be attributed to age, that is, most of the single respondents are in their early twenties and late twenties and that computer education is already added in their curriculum when they were in college.

Age

Table 9 shows that age does not significantly relate to computer competencies. The tabular value at 0.05 level of significance is greater than the computed chi-square. Therefore, the hypothesis that there is no significant relationship between age of the secondary school teachers and the level of their computer competencies is accepted. The comparison of the computed chi-square does not exceed the critical region of the $X_c^2$ distribution.

The table also shows that respondents whose age ranges from 21-30 years are competent in Microsoft word, Microsoft excel, Microsoft power point and Internet software while respondents from 31-40 years are competent in Microsoft word, Microsoft excel and Microsoft power point software, but not competent in the Internet. Respondents from 41-50 years old are competent in the Microsoft word, but not competent in Microsoft excel, Microsoft power point and Microsoft Internet. Respondents aging from 51 years old and above are not competent in the four application software.

Table 9. Relationship of the age of the teacher to their computer competencies

| COMPUTER COMPETENCIES | 21-30 YRS OLD | | 31-40 YRS. OLD | | 41-50 YRS. OLD | | 51 YRS OLD AND ABOVE | | |
|---|---|---|---|---|---|---|---|---|---|
| | W.M. | D.E. | W.M. | D.E. | W.M. | D.E. | W.E. | D.E. | |
| Microsoft word | 2.013 | C | 1.889 | C | 1.627 | C | 1.468 | NC | |
| Microsoft Excel | 1.903 | C | 1.646 | C | 1.348 | NC | 1.333 | NC | $X_c^2 = 0.0048$ |
| Microsoft Power Point | 1.763 | C | 1.542 | C | 1.115 | NC | 1.104 | NC | $X^2_{0.05} = 16.919$ |
| Microsoft Internet | 1.667 | C | 1.450 | NC | 1.266 | NC | 1.197 | NC | Not significant |
| **AVERAGE WEIGHTED MEAN** | 1.836 | C | 1.632 | C | 1.339 | NC | 1.276 | NC | |

**Legend:**

VC (3) = Very Competent 2.50 – 3.00
C (2) = Competent 1.50 – 2.49
NC (1) = Not Competent 1.00 – 1.49

WM = Weighted Mean
DE = Descriptive Equivalent

The result could be attributed to the fact that younger teachers were born in the technology era thus, they are more exposed o the modern technologies than the older teachers. The result supports Marwick (2002) and Wikipedia (2005) as cited by Padya-os (2005) that the older the person, the lesser the probability that he will use modern technology. Therefore, the result suggests that older teachers must learn to use the computer software for them to realize the advantages of the technology to their work.

Years of Work Experience

Table 10 shows that the year of work experience does not significantly relate to computer competencies. The calculated chi-square is less than the tabular value at 0.05 level of significance. Therefore, the hypothesis that there is no significant relationship between the work experience of the secondary school teachers and the level of their computer competencies is accepted.

There were no significant differences in the distribution of respondents according to number of years of teaching. This finding indicates that the length of service of the respondents varies. It also indicates that the respondents entered the service at different times; however, majority of the respondents are still young. The reason for the bigger number of young teachers in service is that older teachers prefer greener pastures and go abroad. Another reason is that, in the area of the study, there are new extension schools and opportunities for young teachers are open.

Table 10 also shows that respondents having a work experience of 1-5 years and 6-10 years are competent in Microsoft word, Microsoft excel, Microsoft power point and Internet software while respondents with a work experience of 11-15 years are competent in Microsoft word, but not competent with Microsoft excel, Microsoft power point and Internet software. Respondents having work experience of 16 years and above are not competent in the four application software.

Table 10. Relationship of the years of work experience of the teachers to their computer competencies

| COMPUTER COMPETENCIES | 1-5 YEARS | | 6-10 YEARS | | 11-15 YEARS | | 16 YEARS AND ABOVE | | |
|---|---|---|---|---|---|---|---|---|---|
| | W.M. | D.E. | W.M. | D.E. | W.M. | D.E. | W.E. | D.E. | |
| Microsoft word | 1.977 | C | 2.027 | C | 1.617 | C | 1.473 | NC | |
| Microsoft Excel | 1.824 | C | 1.833 | C | 1.383 | NC | 1.287 | NC | $X_c^{2 =}$ 0.0446 |
| Microsoft Power Point | 1.729 | C | 1.640 | C | 1.100 | NC | 1.100 | NC | $X^2_{0.05}$=16.919 |
| Microsoft Internet | 1.544 | C | 1.560 | C | 1.180 | NC | 1.272 | NC | |
| **AVERAGE WEIGHTED MEAN** | 1.769 | C | 1.765 | C | 1.32 | NC | 1.283 | NC | Not significant |

**Legend:**

| | | |
|---|---|---|
| VC | (3) = Very Competent | 2.50 – 3.00 |
| C | (2) = Competent | 1.50 – 2.49 |
| NC | (1) = Not Competent | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

According to Hoy and Miskel (2001) as cited by Padya-os (2005), experience is a central criterion in determining job performance of professionals and managerial employees.

The result contradicts Hamilton's (2005) finding that older people appear to be better and faster in grasping the big picture than their younger counter parts.

Educational Attainment

Table 11 shows that educational attainment does not significantly relate to computer competencies. The tabular chi-square at 0.05 level of significance is greater than the computed chi-square value. Hence, the hypothesis, that there is no significant relationship between the educational attainment of the secondary school teachers and the level of their computer competencies is accepted. Thus, no significant relationship exists between educational attainment and competencies.

The table also shows the computer competencies of respondents when grouped according to educational attainment. Those who finished bachelors' degree are competent in Microsoft word, Microsoft excel, Microsoft power point and Internet software. On the other hand, respondents with master's degree are competent only in the Microsoft word but not competent with Microsoft excel, Microsoft power point and Internet software. Meanwhile, respondents with doctorate degree are not competent in all the four application software. The result could be attributed to the fact that computer education is still new in the tertiary curriculum that only the younger respondents have hands on experience and learning in the modern technology.

One reason of this finding is that most teacher-respondents are also young in service and still pursuing their graduate studies. According to Tokoyen (2002) as cited by Buloguey (2005), another factor which hinders teachers from pursuing

Table 11. Relationship of the educational attainment the teacher to their computer competencies.

| COMPUTER COMPETENCIES | BACHELORS DEGREE | | MASTERS DEGREE | | DOCTORATE DEGREE | | |
|---|---|---|---|---|---|---|---|
| | W.M. | D.E. | W.M. | D.E. | W.M. | D.E. | |
| Microsoft word | 1.888 | C | 1.762 | C | 1.167 | NC | |
| Microsoft Excel | 1.763 | C | 1.452 | NC | 1.000 | NC | $X_c^{2 =} 0.0353$ |
| Microsoft Power Point | 1.617 | C | 1.223 | NC | 1.000 | NC | $X^2_{0.05} = 12.592$ |
| Microsoft Internet | 1.541 | C | 1.264 | NC | 1.050 | NC | |
| **AVERAGE WEIGHTED MEAN** | 1.702 | C | 1.425 | NC | 1.054 | NC | Not significant |

**Legend:**

VC (3) = Very Competent 2.50 – 3.00
C (2) = Competent 1.50 – 2.49
NC (1) = Not Competent 1.00 – 1.49

WM = Weighted Mean
DE = Descriptive Equivalent

their studies could be their family, since the majority of the respondents are married. However, Filipino teachers must face up the challenge to continue and update their conceptual competence. Guerero (1989) as cited by Goygoyan (2006), stressed that quality of education is said to be dependent upon the quality of teachers, supervisors, and administrators that the system employs. One of the qualities of teachers is then academic and professional training and/or advancement.

Trainings/Seminars Attended

Table 12 shows that trainings and seminars do not significantly relate to computer competencies. The derived chi-square is less than the tabular chi-square value at 0.05 level of significance. Hence, the hypothesis, that there is no significant relationship between the trainings and seminars of the secondary school teachers and their level of computer competencies is accepted. Thus, there is no relationship of the trainings and seminars to the computer competencies of the secondary school teachers.

Table 12. Relationship of the trainings/seminars attended by the teachers to their computer competencies

| COMPUTER COMPETENCIES | NATIONAL | | REGIONAL | | LOCAL | | OTHER | | NONE | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | W.M. | D.E. | W.M. | D.E. | W.M. | D.E. | W.M. | D.E. | W.M. | D.E. | |
| Microsoft word | 2.024 | C | 2.181 | C | 1.923 | C | 1.833 | C | 1.691 | C | |
| Microsoft Excel | 1.595 | C | 1.806 | C | 1.711 | C | 1.762 | C | 1.616 | C | $X_C^2 = 0.0848$ |
| Microsoft Power Point | 1.857 | C | 1.833 | C | 1.562 | C | 1.393 | NC | 1.419 | NC | $X^2_{0.05} = 21.026$ |
| Microsoft Internet | 1.543 | C | 1.733 | C | 1.557 | C | 1.543 | C | 1.324 | NC | |
| **AVERAGE WEIGHTED MEAN** | 1.755 | C | 1.888 | C | 1.688 | C | 1.633 | C | 1.513 | C | Not significant |

**Legend:**

VC (3) = Very Competent 2.50 – 3.00
C (2) = Competent 1.50 – 2.49
NC (1) = Not Competent 1.00 – 1.49

WM = Weighted Mean
DE = Descriptive Equivalent

The table also shows that respondents who attended national, regional and local seminars related to computer education are competent in Microsoft word, Microsoft excel, Microsoft power point and Internet software. Respondents who attended other types of seminars related to computer education are competent in Microsoft word, Microsoft excel and Internet software, but not competent in Microsoft power point software while respondents who never attended seminars related to computer education are competent in Microsoft word and Microsoft excel, but not competent in Microsoft power point and Microsoft internet.

This finding could be attributed to financial matters because the trainings and seminars are conducted in the major cities, there is a need of much money to travel or another reason is the registration for the seminar is too expensive for an ordinary teacher. This finding is in harmony with what DepEd. (2005) found that training opportunities for teachers are generally limited. It can be seen that the secondary school teachers of Buguias had no access to trainings and seminars. Even in the school level where everybody has the opportunity to attend, only a few are privileged to attend. According to Buloguey (2005), few attend the national and regional seminars and trainings, only those who had higher positions were given opportunities to attend. One reason for this situation is lack of financial assistance which is needed in order to join such trainings and seminars since these are not free.

Degree of Adequacy of Computers in the Secondary Schools of Buguias, Benguet.

Table 13 presents the weighted mean and descriptive equivalent of the computers adequacy in the secondary schools of Buguias. The degree of adequacy of computers as perceived by the respondents is inadequate as indicated by the average weighted mean of 1.312. The derived t-test is higher than the tabular value at 0.05 level of significance. Hence, the hypothesis that there is no significant difference in the degree of adequacy of computers is rejected.

The result could be attributed to the fact that the schools in the area of the study are extensions and that their priority is in the faculty and staff, classrooms and other infrastructures and not the purchase of computers. Another reason is

Table 13. Degree of adequacy of computers in the secondary schools of Buguias, Benguet

| ADEQUACY OF COMPUTERS | WM | DE | |
|---|---|---|---|
| 1. Adequacy of computer units in the school | 1.33 | IA | |
| 2. Computer units to user ratio | 1.323 | IA | tc = 1750.64 |
| 3. Time usage of computer units in the school | 1.281 | IA | $T_{0.05 =}$ 4.303 |
| **AVERAGE WEIGHTED MEAN** | 1.312 | IA | Significant |

**Legend:**

VA (3) = Very adequate 2.50 – 3.00
A (2) = Adequate 1.50 – 2.49
IA (1) = Inadequate 1.00 – 1.49

WM = Weighted Mean
DE = Descriptive Equivalent

that computers in the main schools are limited. Furthermore, access to computer is limited making it difficult for teachers to find sufficient time for computer use. Moreover, teachers are overloaded with teaching units and extra works that they don't have adequate time to use the computers. This supports the findings of Asan (2003), on the frustrations of teachers for not having sufficient time for computer use.

Effect of the Adequacy of Computers to the Attainment of the Objectives.

Table 14 shows that the adequacy of computers significantly affects the level of attainment of objectives of computer education. The calculated coefficient of correlation is greater than the tabular value at 0.05 level of significance. Therefore, the hypothesis, that there is no significant effect of the adequacy of computers to the attainment of the objectives is rejected.

Nowadays, all people employed as classroom teachers need to develop the skills which will enable them to maximize the use of the computer as a teaching resource and may use computers to record grades and perform other administrative and clerical duties. The Philippines recognizes the importance and the vital role of computer education in nation building (Reyes, 2000). According to NEDA (2004), technology is the foundation of the country's future economic development. Therefore the result suggests that even with limited access to computers or insufficient training of teachers, the respondents have to continually

Table 14. Effect of the adequacy of computers to the attainment of the objectives

| OBJECTIVES | LEVEL OF ATTAINMENT OF OBJECTIVES | | ADEQUACY OF COMPUTERS | | |
|---|---|---|---|---|---|
| | WM | DE | WM | DE | |
| 1. To create documents and to retrieve and communicate needed information effectively and efficiently. | 2.125 | MA | 1.331 | IA | |
| 2. To acquire a basic core of skills that is needed to research information with the use of information technology. | 1.990 | MA | 1.311 | IA | $r_s = 0.875$ |
| 3. To participate actively in one's profession not only to co-workers in the workplace but also to other professionals around the world. | 1.979 | MA | 1.335 | IA | r .05 = 0.8114 |
| 4. To develop the personal and work special skills of learners especially their interpersonal skills, vocational skills, problem solving and decision making in daily life. | 1.990 | MA | 1.368 | IA | Significant |
| 5. To enhance disposition of Learners for life long learning and continues professional development. | 1.896 | MA | 1.326 | IA | |
| **AVERAGE WEIGHTED MEAN** | 1.996 | MA | 1.334 | IA | |

**Legend:**

| | | | |
|---|---|---|---|
| FA (3) = Fully Attained | 2.50 – 3.00 | VC (3) = Very competent | 2.50 – 3.00 |
| MA(2) = Moderately Attained | 1.50 – 2.49 | C (2) = Competent | 1.50 – 2.49 |
| NA (1) = Not Attained | 1.00 – 1.49 | NC (1) = Not competent | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

improve or update their competencies, learn to use the software and discover the advantages it gives.

Correlation of the Computer Competencies to the Attainment of Objectives.

Table 15 shows that the computer competencies of the secondary school teachers significantly relate to the attainment of objectives of computer education. The calculated coefficient of correlation is greater than the tabular value at 0.05 level of significance. Therefore, the hypothesis that there is no significant correlation of computer competencies to the attainment of the objectives is rejected. Hence, the computer competencies of the secondary school teachers affect the attainment of the objectives.

The goal and objective of the Department of Education is to move towards global competitiveness through the use of modern technology. According to GAA (1996), the introduction and use of modern technology is to improve the educational management and support operations in the educational system. The use of computers in education opens a new era of knowledge and offers a tool that has the potential to change some existing educational methods. The teacher is the key to the effective exploitation of this resource in the educational system and that the teacher should be computer literate. The webopaedia (1996) defines computer literacy as the level of expertise and familiarity someone has with computers. According to Elliot et al. (1996) as cited by Padya-os (2005), that computer is used to manage school records pertaining to students, teachers and curriculum. The result is in harmony with the idea of Harris and Hartman (2002), that computer is relevant in the fast changing world in terms of planning,

Table 15. Correlation of the computer competencies to the attainment of objectives

| OBJECTIVES | LEVEL OF ATTAINMENT OF OBJECTIVES | | COMPUTER COMPETENCIES | | |
|---|---|---|---|---|---|
| | WM | DE | WM | DE | |
| 1. To create documents and to retrieve and communicate needed information effectively and efficiently. | 2.125 | MA | 1.551 | C | |
| 2. To acquire a basic core of skills that is needed to research information with the use of information technology. | 1.990 | MA | 1.600 | C | $r_s$ = 0.925 |
| 3. To participate actively in one's profession not only to co-workers in the workplace but also to other professionals around the world. | 1.979 | MA | 1.604 | C | r .05 = 0.8114 |
| 4. To develop the personal and work special skills of learners especially their interpersonal skills, vocational skills, problem solving and decision making in daily life. | 1.990 | MA | 1.585 | C | Significant |
| 5. To enhance disposition of learners for Life long learning and continues professional development. | 1.896 | MA | 1.607 | C | |
| **AVERAGE WEIGHTED MEAN** | 1.996 | MA | 1.589 | C | |

**Legend:**

| | | | |
|---|---|---|---|
| FA (3) = Fully Attained | 2.50 – 3.00 | VC (3) = Very competent | 2.50 – 3.00 |
| MA(2) = Moderately Attained | 1.50 – 2.49 | C (2) = Competent | 1.50 – 2.49 |
| NA (1) = Not Attained | 1.00 – 1.49 | NC (1) = Not competent | 1.00 – 1.49 |

WM = Weighted Mean
DE = Descriptive Equivalent

communication, research, and education. The findings corroborates with the idea of Edward and Roblyer (2000) as cited by Padya-os (2005) that the information technology-oriented educators and technology experts review the full benefits of the technology's potentials to improve teaching, learning and productivity in a school level.

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### Summary

This study was conducted to analyze the computer literacy of teachers in the secondary schools of Buguias, Benguet Division. The objectives are to determine the level of attainment of the objectives of computer education; to determine the teachers level of computer competencies in terms of Microsoft word, Microsoft excel, Microsoft power point and internet; to determine if there is a significant relationship of the socio-professional profile of the teachers to their computer competencies; to find out the degree of adequacy of computers in the secondary schools of Buguias; to determine if there is a significant effect of the adequacy of computers to the attainment of the objectives; and to determine if there is a significant correlation of the computer competencies to the attainment of objectives.

The study was conducted in all the public secondary schools of Buguias, Benguet Division. There were ninety six secondary school teachers involved in the study. The data were gathered during the first semester of the school year 2006-2007. The data were statistically analyzed applying percentage, weighted mean, t-tests, chi-square and spearman's coefficient of correlation by ranks.

Analysis of data revealed the following findings:

1. The secondary school teachers perceived that the objective of computer education in Buguias is moderately attained.

2. The secondary school teachers perceived themselves as competent in the Microsoft word and Microsoft excel software, but not competent in the Microsoft power point and internet software.

3. The relationship of the socio-professional profile of the teachers to their computer competencies is perceived as not significant.

4. On the degree of adequacy of computers, the secondary school teachers perceived it as inadequate.

5. On the significant effect of the adequacy of computers to the attainment of objectives, the secondary school teachers perceived it as significant.

6. The secondary school teachers perceived the correlation of the computer competencies to the attainment of objectives as significant.

Conclusions

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

1. The different secondary schools of Buguias uniformly attained the objectives of computer education.

2. The respondents varied in their computer competencies in the different activities under the different system softwares.

3. The socio-professional profile did not affect the computer competencies of the teacher.

4. The different secondary schools of Buguias are lacking in computers for them to fully cater to the needs of instruction.

5. The adequacy of computers in the secondary schools of Buguias can be utilized to gauge the attainment of objectives of computer education.

6. The computer competencies of the secondary teachers correlate with the attainment of the objectives thus, the competencies of the secondary teachers can be used as device to measure the attainment of objectives of computer education.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are forwarded:

1. Teachers should make use of computers and computer related technologies in their classrooms.

2. Teachers should attend more trainings and seminars in relation to computer education especially hands-on trainings on computers.

3. All teachers must be required to be computer literate.

4. School heads under the School Based Management should find ways and means to avail more computer units for their school.

5. Teachers should be given more time in learning computer applications and engage themselves to the computer technology.

6. Secondary school teachers should utilize the software such as Microsoft word, Microsoft excel, Microsoft power point and internet in their work and find time to update their skills in computer.

**LITERATURE CITED**


ABCEDE, M. (2005). Policies on the Use of ICT in Education. www.unescobkk.org

ALATALO, TONI. (1999). Riding the Tidal Wave. WWW. ISOC. Org.

ASAN, A. (2003). Computer Technology Awareness by Elementary School Teacher: A Case Study from Turkey. http://worldbank.org

ANDES, A.M. SR., (2002). Simple Excel XP Fully Illustrated. Andes Mountain Printers. Pp. A1

BITTER, G.G., (1984). Computers in Today's World. John Wiley and Sons, Inc. pp. 44-63

BULOGUEY, LEILA, P. (2005). "The Status of Teaching Social Studies in the Public Secondary Schools of Buguias and Mankayan Districts, Benguet Division." Unpublished Masteral Thesis. BSU. La Trinidad, Benguet.

BURSTEIN, J. S. (1986). Computers and Information Systems. CBS College Publishing. Pp. 552-563

CAPRON, H.L. (1990). Computers: Tools for an Information Age. The Benjamin/Cummings Publishing Company, Inc. pp. 3-16

COOK, D., (1998). Computers: History and Development. www.history.htm

DTI, (2006). PC's for Public Schools (PCPS) Project. www.dti.gov.ph

FREEZE, J.T., (1998). Teach Yourself: Computer Basics in 24 Hours. A Division of MacMillan Computer Publishing. Pp. 155-160

GOYGOYAN, LINDA, P. (2006) "Quality and Effectiveness of Teaching Technology and Home Economics in the Secondary Schools in Benguet." Unpublished Masteral Thesis." BSU-BC. Loo, Buguias, Benguet.

HAMILTON, S. (2005). Older People Get the Big Picture Faster and They are Less Inhibited. www. Sciencedaily.com.

HSU, H.G., (2005). A Study on Computer Literacy of Students at U/CJC of Technology in Taiwan. www.cjc.org

LA PUTT. J.T., (1986). Introduction to Computer Concepts. Baguio Research and Publishing Center. Pp. 27-30

LONG, L. (1994). Introduction to Computers and Information Processing. 4th Edition. Prentice-Hall International, Inc. Pp. 2-6

MACQT, (2004). Competencies required of the Beginning Teacher. www.macqt.com

MENDOZA, R. J. (2003). Makabayan Curriculum for Secondary Schools in the Philippines: The Development of Citizenship. WWW. Springerlink.com

NEDA, (2004). National Initiatives Concerning the ICT and Education/Training-Philippines. www.vcsa.uiuc.edu

ONLINE DICTIONARY. (2006). WWW. Webopedia.Com

PADYA-OS, AGUSTIN, P. (2005).”Computer Competencies of Public Elementary and Secondary School Heads in the Division of the city Schools, Baguio City.” Umpublished MAsteral Thesis. BSU. La Trinidad, Benguet.

REYES, J.C.P. (2000). Information Technology Standardization in the Philippines. www.cicc.or.jp

SANGEETA, P. (2006) Computers: A Blessing or Curse? Advantages of Computers. WWW. Indian child. Com.

SCHWARE, R., (2000). Technology in Education: The Turkish Experiment. http://worldbank.org/html/extdr/extme/1838.htm

STAIR, R.M. JR., (1985). Programming in Baic: Structured Programming, Cases, Applications and Modules. Richard D. Irwin, Inc. pp. 3-4

UNESCO, (2005). Vision and Mission of the 21st Century Filipino Learner. www.unescobkk.org

WIKIPEDIA, (2006). Microsoft Word. En.wikipedia.org

ZWASS, V., (1981). Introduction to computer Science. Harper and Row, Publisher, Inc. pp. 4-7

Appendix A

LETTER OF COMMUNICATION

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

GRADUATE SCHOOL

MARY B. NAMUHE, CESO V
Schools Division Superintendent
Benguet Division

Madam:

The undersigned is conducting a research entitled "COMPUTER LITERACY OF TEACHERS IN THE SECONDARY SCHOOLS OF BUGUIAS, BENGUET DIVISION." This study is conducted in partial fulfillment of the requirements of the degree Master of Arts in Education (Administration and Supervision)

In this regard, he requests permission from your good office to float questionnaires to the different secondary schools in your area of responsibility, Benguet Division.

I believe in respecting one's identity and privacy, in this account you are assured that the data gathered will be kept confidential and will be solely for this study.

Your favorable action to this purpose will be highly appreciated.

Thank you very much.

Respectfully yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

APPROVED:

(Sgd) MARY B. NAMUHE, Ed. D., CESO V
Schools Division Superintendent
Division of Benguet

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

GRADUATE SCHOOL

LUIS D. IGUALDO
Teacher In - Charge
Buguias National High School
Bot-oan Extension

Sir:

The undersigned is conducting a research entitled "COMPUTER LITERACY OF TEACHERS IN THE SECONDARY SCHOOLS OF BUGUIAS, BENGUET DIVISION." This study is conducted in partial fulfillment of the requirements of the degree Master of Arts in Education (Educational Administration and Supervision)

In this account, he would like to ask your permission to allow your teachers to be the respondents. Rest assured that all data gathered will be kept confidential and will be solely for this study.

Thank you very much.

Respectfully yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

APPROVED:

(Sgd) LUIS D. IGUALDO
Teacher In - Charge
Buguias National High School
Bot-oan Extension

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

GRADUATE SCHOOL

AGRIFINA B. MAGAN
Teacher In - Charge
Buguias National High School
Loo Extension

Ma'am:

The undersigned is conducting a research entitled "COMPUTER LITERACY OF TEACHERS IN THE SECONDARY SCHOOLS OF BUGUIAS, BENGUET DIVISION." This study is conducted in partial fulfillment of the requirements of the degree Master of Arts in Education (Educational Administration and Supervision)

In this account, he would like to ask your permission to allow your teachers to be the respondents. Rest assured that all data gathered will be kept confidential and will be solely for this study.

Thank you very much.

Respectfully yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

APPROVED:

(Sgd) AGRIFINA B. MAGAN
Teacher In - Charge
Buguias National High School
Loo Extension

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

GRADUATE SCHOOL

MERCEDES S. ANTONIO
Principal I
Sinipsip National High School

Ma'am:

The undersigned is conducting a research entitled "COMPUTER LITERACY OF TEACHERS IN THE SECONDARY SCHOOLS OF BUGUIAS, BENGUET DIVISION." This study is conducted in partial fulfillment of the requirements of the degree Master of Arts in Education (Educational Administration and Supervision)

In this account, he would like to ask your permission to allow your teachers to be the respondents. Rest assured that all data gathered will be kept confidential and will be solely for this study.

Thank you very much.

Respectfully yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

APPROVED:

(Sgd) MERCEDES S. ANTONIO
Principal I
Sinipsip National High School

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

GRADUATE SCHOOL

BELINA A. ANTONIO
Teacher In - Charge
Sinipsip National High School
Bangao Extension

Ma'am:

The undersigned is conducting a research entitled "COMPUTER LITERACY OF TEACHERS IN THE SECONDARY SCHOOLS OF BUGUIAS, BENGUET DIVISION." This study is conducted in partial fulfillment of the requirements of the degree Master of Arts in Education (Educational Administration and Supervision)

In this account, he would like to ask your permission to allow your teachers to be the respondents. Rest assured that all data gathered will be kept confidential and will be solely for this study.

Thank you very much.

Respectfully yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

APPROVED:

(Sgd) BELINA A. ANTONIO
Teacher In - Charge
Sinipsip National High School
Bangao Extension

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

GRADUATE SCHOOL

MILA I. SIMEON
Principal I
Buguias National High School

Ma'am:

The undersigned is conducting a research entitled "COMPUTER LITERACY OF TEACHERS IN THE SECONDARY SCHOOLS OF BUGUIAS, BENGUET DIVISION." This study is conducted in partial fulfillment of the requirements of the degree Master of Arts in Education (Educational Administration and Supervision)

In this account, he would like to ask your permission to allow your teachers to be the respondents. Rest assured that all data gathered will be kept confidential and will be solely for this study.

Thank you very much.

Respectfully yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

APPROVED:

(Sgd) MILA I. SIMEON
Principal I
Buguias National High School

Republic of the Philippines
BENGUET STATE UNIVERSITY
La Trinidad, Benguet

GRADUATE SCHOOL

BASITO S. COTIW-AN, Ph. D.
Executive Dean
Benguet State University
Buguias Campus

Sir:

The undersigned is conducting a research entitled "COMPUTER LITERACY OF TEACHERS IN THE SECONDARY SCHOOLS OF BUGUIAS, BENGUET DIVISION." This study is conducted in partial fulfillment of the requirements of the degree Master of Arts in Education (Educational Administration and Supervision)

In this account, he would like to ask your permission to allow your teachers to be the respondents. Rest assured that all data gathered will be kept confidential and will be solely for this study.

Thank you very much.

Respectfully yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

APPROVED:

(Sgd) BASITO S. COTIW-AN, Ph. D.
Executive Dean
Benguet State University
Buguias Campus

Republic of the Philippines
GRADUATE SCHOOL
La Trinidad, Benguet

The Respondent
Buguias District
Benguet, Philippines

SIR/MADAM:

The undersigned is conducting a research entitled “Computer Literacy of Secondary School Teachers of Buguias, Benguet Division”. This study is conducted as a requirement for Master of Arts in Education.

In order for the researcher to come up with relevant data for research, kindly answer the questionnaire attached. Please do not leave any item unanswered. Rest assured that the answers will be treated confidentially and strictly for research purpose only.

Thank you very much for your cooperation.

Truly yours,

(Sgd) JERAHMEEL B. LASEGAN
Researcher

Appendix B

**QUESTIONNAIRE**

I. Profile

Direction: Kindly check and fill in the blank with the needed information that suits your profile.

1. **Name** (Optional) _____

2. **Gender** _____Male _____Female **Age** _____ 21-30 _____ 31-40 _____ 41-50 _____ 51 and above

3. **Civil Status** _____ Single _____ Married

4. **Number and level of trainings/seminars attended in relation to computer education**

| Number of Trainings/ seminars attended | Level of Trainings/seminars attended |
|---|---|
| _____ | _____ National level |
| _____ | _____ Regional level |
| _____ | _____ Local/Division level |
| _____ | _____ Others (Please specify) |

5. **Highest Educational Attainment**

_____ Bachelor's degree
_____ Master's degree
_____ Doctorate degree
_____ Others (Please specify)

6. **Years of Teaching Experience**

_____ From 1 yr. to 5 years
_____ From 6 yrs. to 10 years
_____ From 11 yrs. to 15 years
_____ From 16yrs. and above

II. Degree of attainment of the objectives.

Direction: Kindly check on the column that would answer the individual Objective as guided by the following scale below.

**3 = Fully Attained (FA)** – Objective is realized by respondent and is actually Attained.

**2 = Moderately Attained (MA) –** Objective is realized by the respondent but still Need to work on the full attainment of the Objective.

**1 = Not Attained (NA)** – Objective is not realized nor attained by the respondent.

| **Objectives** | **FA (3)** | **MA (2)** | **NA (1)** |
|---|---|---|---|
| 1. To appreciate the use of computer, to create documents and to retrieve and communicate needed information effectively and efficiently. | | | |
| 2. To acquire a basic core of skills that is needed to research information with the use of information technology. | | | |
| 3. To enhance learners for life long learning And continues professional development. | | | |
| 4. To develop the personal and work special skills, especially their interpersonal skills, vocational skills, problem solving and decision making in daily life. | | | |
| 5. To participate actively in one's profession not only to co-workers in the workplace but also to other professionals around the world through the Web/internet. | | | |
| 6. Others(Please Specify) | | | |

III. Level of computer competencies of the secondary school teacher.
Direction: Kindly rate your level of competencies in terms of the following Applications as guided by the following scale below.

**3** = **Very Competent (VC)** – When respondent knows how to operate the Program without any help or guidance.

**2** = **Competent (C)** – When respondent knows how to operate the program But sometimes needs assistance or guidance.

**1** = **Not Competent (NC)** – When respondent don't know how to operate the Program.

| **MICROSOFT WORD** | **VC (3)** | **C (2)** | **NC (1)** |
|---|---|---|---|
| 1. Encoding documents (Lesson outlines, grading sheets, annual reports) | | | |
| 2. Lay outing documents | | | |
| 3. Importing graphics and inserting pictures | | | |
| 4. Editing documents | | | |
| 5. Working with tables | | | |
| 6. Making illustrations with graphical programs | | | |
| 7. Others (Please specify) | | | |

| **MICROSOFT EXCEL** | **VC (3)** | **C (2)** | **NC (1)** |
|---|---|---|---|
| 1. Encoding documents in a worksheets (Grading sheets, graphical data presentation) | | | |
| 2. Formatting a worksheet | | | |
| 3. Editing a worksheet | | | |
| 4. Entering formulas and functions | | | |
| 5. Inserting clip arts and pictures | | | |
| 6. Creating charts | | | |
| 7. Others (Please specify) | | | |

| MICROSOFT POWER POINT | VC (3) | C (2) | NC (1) |
|---|---|---|---|
| 1. Creating a slide show | | | |
| 2. Creating slide with graphs and charts | | | |
| 3. Adding and formatting text | | | |
| 4. Creating animated slides | | | |
| Others (Please specify) | | | |

| INTERNET | VC (3) | C (2) | NC (1) |
|---|---|---|---|
| 1. Web surfing/searching | | | |
| 2. Internet research | | | |
| 3. E-mail | | | |
| 4. On line chatting | | | |
| 5. Downloading | | | |
| Others (Please specify) | | | |

IV. Please check the appropriate column that corresponds to the degree of adequacy of computers available in your school as guided by the following scale below:

3 = **Very Adequate** (VA) – Computer units is available to teachers in 1: 1 to 1: 2 ratio and with at least 3 hrs of use/day/teacher.
2 = **Adequate** (A) – Computer units is available to teachers at 1: 3 to 1: 6 ratio and time limit to user is 1 hr/day/teacher.
1 = **Inadequate** (I) – Computer units in the school is less than 3, usage is 1-2 hrs/week or none at all.

| | VA (3) | A (2) | I (1) |
|---|---|---|---|
| 1. Adequacy of computer units in the school | | | |
| 2. Computer units to user ratio | | | |
| 3. Time usage of computer units in the school | | | |
| 4. Others (Please specify) | | | |

# BIOGRAPHICAL SKETCH

The author was born at Abatan, Buguias, Benguet on the 12th of January, 1976. He is the youngest child of Rev. Benjamin Ciriaco Lasegan Sr. and Mrs. Elizabeth Bugtong Lasegan both from Cruz, La Trinidad, Benguet.

He started his elementary education at the Central Elementary School, La Trinidad, Benguet and finished at Quezon Elementary School, Baguio City in 1988. He finished his secondary education at Saint Louis University – Laboratory High School (SLU-LHS, Boy's High) in 1992.

Not contented with his high school education, he enrolled at the Benguet State University (BSU), La Trinidad, Benguet, as first year towards a Bachelors degree in Secondary Education major in Physics, a four year curriculum which he finished in 1996. In August 1996, he passed the Licensure Examination for Teachers (LET).

He got his first assignment of teaching at Concordia Theological College, San Juan, La Union. In the school year 1999-2000 and school year 2000-2001, he was employed at Benguet State University, La Trinidad, Benguet as a contractual Physics instructor at the Math-Physics-Statistics-Information Technology (MPSIT) Department under the College of Arts and Sciences. In August 2005, he was employed at the Benguet State University – Buguias Campus as a Physics teacher, a position he holds up to the present.

He is married to Miriam Bayog-Lasegan of Abatan, Buguias, Benguet, whom he is blessed with two lovely children; Jaelen Mithkah and Jeush Ben. They are presently residing at the Lutheran Compound, Abatan, Buguias, Benguet.