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Introducing Young Children to
Basic Computer Skills
At the Duang Prateep Foundation

An Interactive Qualifying Project
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Dedicated to Henry Strage and the children of the Duang

*Prateep Foundation: Henry, for his generosity, and the children, for
receiving it with such enthusiasm and gratitude.*

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Authorship

Our group feels that we have all exerted an equal amount of effort in the completion of this paper.

Abstract

As technological advancement continues to rise in the 21st Century, the technology gap between developed and developing countries grows wider. In Thailand, one of the contributors to this disparity is the computer illiteracy within the slums. This chasm is especially evident in young children. The first and foremost goal of this project is to help minimize this technology gap by introducing young children to basic computer skills at the Duang Prateep Foundation of the Klong Toey slum in Bangkok, Thailand.

Executive Summary

In the 21st Century, Information Technology (IT) is advancing at an ever-increasing rate, its escalating use altering the way society lives, works, and learns. IT harbors the potential for spreading economic activity, wealth distribution, and most importantly, education. However, if applied in an incorrect manner, IT can lead to negative consequences, creating classes of information “haves” and “have-nots,” leaving the poor further behind in society.

In Thailand, a developing Asian country, there is a large disparity between these two classes. Technologically undereducated slum dwellers make up a large portion of the information deficient populace. The key to narrowing this technology gap is education. Thus, our project was designed to begin this education process, starting with the children of the Klong Toey slum in Bangkok.

Located in the heart of Klong Toey, the Duang Prateep Foundation (DPF) focuses on the well-being of slum dwellers. Serving and educating the community, its concentration is on children. While working with the DPF in child education, our objective was to design and implement a program introducing its kindergarten children to computers. This introduction to basic computer skills does not ensure the children’s future economic success, but it greatly increases their opportunities.

In order to accomplish our main objective, some sub objectives needed to be implemented. Effectively introducing the children to computers required their teachers to first go through extensive training, enabling them to independently administer the computer education upon our departure. A computer lab was necessary to provide a proper learning environment, thus requiring the acquisition of computers.

A substantial amount of preliminary research was completed in order to fully understand the scope of this project. Since teaching was our focus, two influential child

educators were studied: Maria Montessori and Seymour Papert. Montessori is known for her alternative ways of educating children, while Papert is known for his work in melding education with technology.

Also through our research, an exceptional individual by the name of Rodrigo Baggio was discovered. Baggio is a pioneer, working in the slums of Rio de Janeiro, where he helps combat the lack of technology by bringing computers into the slums. His strategies were used in the implementation of our project.

Incorporating the strategies and teaching philosophies of Montessori and Papert, lesson plans were created to train the teachers of the DPF. In addition, booklets were used as a learning aid during class. Each of the 16 kindergarten teachers completed twelve hours of education, divided into four classes. Fundamental computer skills were covered, including components of the computer, drives and directories, finding files, CD-ROMs, Microsoft Paint, and Microsoft Word. The teachers later taught these topics to the children.

Upon receiving a very generous monetary donation for the project, we purchased eight, state-of-the-art computers and two printers, creating a new children's computer laboratory. The location for this lab was chosen by the DPF to be in one of their kindergarten classrooms. With the help of the teachers, we assembled the computers and printers into a Local Area Network (LAN). This LAN provided for file, printer, and CD-ROM sharing between all computers.

With the completion of the teacher education program and the creation of the computer lab, the teachers were versed and confident enough in the basics of computers to commence the child education. Our roles, in the lessons with the students, were as aides or advisors rather than as instructors. The ability of the DPF teachers to educate their children in computer skills, an objective from the beginning, was a testament to the success of the project.

During these sessions, the children covered some of the same topics as the teachers, such as the components of the computer and Microsoft Paint, a program they greatly enjoyed. Beginning by drawing lines and shapes, the children progressed very quickly to pictures and characters. By the end of their second session, the children had even mastered double-clicking, a troublesome skill for the teachers. Throughout the teaching sessions, the children were always smiling and enthusiastic.

To continue minimizing the technology gap between the information “haves” and “have-nots,” the children’s education program needs to continue. The project team recommends that the lab be in constant use – by the kindergarteners in the daytime, and possibly by adults and adolescents at night.

Introducing the children of Klong Toey to technology through education has provided a first step in increasing their likelihood for future success. This education could improve the way of life for many residents of the slum.

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1. Introduction

Thailand is one of the most progressive, developing Asian countries. Although some areas of Thailand are technologically, economically, and educationally advanced, most of the country is still far behind the Western standard. Even among very young children, this chasm is evident. A major reason for this gap is the large population of undereducated slum dwellers. Scarcity of technological education is the cause of their deficient knowledge of computers. Since technology has become an integral part of the modern world, education in technology is imperative to close the economic gap. The intent of this project was to begin bridging this gap through teaching computer skills to the children of Klong Toey.

Bangkok's Klong Toey is the largest slum area in Thailand. Children of the slum are often undereducated as a result of dropping out of school to help support their families. Due to this lack of education, money, and resources, the Thai slum dwellers have a limited knowledge of technology. Introducing the residents of Klong Toey to basic computer skills does not ensure economic success, but it greatly increases their future opportunities.

For the past twenty years, The Duang Prateep Foundation (DPF), a Non-Government Organization (NGO), has been committed to improving the well-being of the Klong Toey populace, particularly children. Although the foundation has a kindergarten program, it did not previously have computers specifically set aside for the kindergarten's use. The goal of this project was to design and implement a program to introduce computers to the kindergarten children of the DPF. The tasks of this project included developing a training program for the teachers, finding a location for a computer lab, acquiring multiple workstations and desks, setting up the lab, teaching students, and ensuring security and maintenance availability for the computers.

Our project was the first step in increasing computer literacy in Klong Toey. In the future, the lab could be opened at night to adolescents and adults. These efforts could also become a model for implementing a larger scale project aiding in the computer education of slum dwellers throughout Thailand, improving their prospects for success.

The following document is a detailed account of our project, including research, procedures, analyses, and conclusions. The Literature Review provides background information, necessary for understanding all facets of the project. Procedures carried out for the project's completion are discussed in the Methodology, while their outcomes are examined in the Results and Analysis. The Conclusions present a final summary of the completed project in addition to recommendations for future work.

2. Literature Review

The following is a discussion of the background research necessary for understanding all aspects of the project. It includes a discussion of Thai Social Norms, providing an illustration of the project's cultural setting. Technological education, the main focus of our efforts, prompted an examination of Thailand's education system as well as Information Technology in Thailand. Serving as the site of our work, the Klong Toey Slum and the Duang Prateep Foundation, are both discussed. Finally, teaching methods in relation to children and technology are addressed, supplying the framework for the teaching program later implemented.

2.1 Thai Social Norms

There are many ways that the Thai culture differs from those of the West. Ninety-five percent of the Thai population practices Theravada Buddhism, which has a direct effect on their cultural traditions. This type of Buddhism teaches about suffering, selflessness, impermanence, and self-control. Consequently, many values and social standards that the Thais have are different from those exhibited in Western cultures, including non-confrontation, the concept of "saving face", and social hierarchy.

Since Thais are known to be non-confrontational, working in their culture can be different from working in the West, where employees speak up when they have questions, unafraid to query a superior's decision. In the Thai society, this practice is considered impolite, and therefore is not generally displayed.

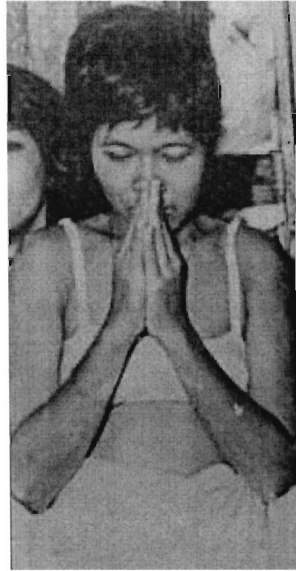


Figure 1: A Thai woman practicing the traditional Wai

Another underlying notion of Thai culture is “face” [Passport Thailand, The Thai, 1997]. This is the dignity that one gets from others as a result of good social relations (as opposed to self dignity). If a Thai does something that is disrespectful or embarrassing, they “lose face”. On the other hand, superiors are expected to “give face”, or respect subordinates’ dignity, praising their efforts [Passport Thailand, The Thai, 1997].

In Thailand, there is a social hierarchy, something that most Westerners do not deal with directly. In this hierarchy, people may begin high on the scale or earn their way up based on multiple criteria, including possession of power, wealth, professional rank, age, merit, and birth [Working with the Thais, 1997]. The more of these traits a person possesses, the higher their rank is in relation to others.

2.2 Education

Education in Thailand began in the Sukhothai period (13th Century) under King Ramkhamhaeng, with his development of the first Thai alphabet. Availability of this early schooling was limited to the aristocracy and clergy; the rest of society was either enlisted in

the military or practiced farming, therefore having little need for reading skills. Buddhist monasteries were the main locations for learning and were only available to a minute portion of the male population. Under the reign of King Mongkut (1851-1865), Western influence escalated and the education system for Thai children was restructured to suit the nation's new needs. The ability to speak English became a necessity, therefore an English teacher was hired for the royal children. Education was further improved under the reign of King Chulalongkorn (1868-1910), when a school was opened in the Palace. An outside school was also established for the children of the commoners.

The evolution of education continued when The Department of Education was established in 1887, becoming a full-fledged Ministry in 1982. Government primary schools were established throughout the kingdom to improve literacy, good citizenship, and the standard of living. In 1932, after a constitutional monarchy was adopted as the form of Government, a National Educational Scheme was drafted. This plan formally recognized individual educational aptitude regardless of sex, social background, or physical condition. The National Educational Scheme is regularly revised to guarantee every Thai citizen exposure to four major aspects of education: *Puttisuksa* (Intellectual education), *Chariyasuksa* (Moral education), *Palasuksa* (Physical education), and *Hattasuksa* (Practical education).

The current education system in Thailand is broken up into four levels; six primary years, three lower secondary years, three upper secondary years, and four tertiary years (these levels are analogous to the United States' elementary, junior high, high school, and college levels, respectively). The six primary years of schooling are now compulsory in Thailand. However, a project to increase this requirement to twelve years will start in 2002.

In 1910, Chulalongkorn University, the first university in Thailand, was founded with four major areas of study: Medicine, Law and Political Science, Engineering, and Arts and

Science. At the present time, there are over 70 universities in Thailand, offering a wide variety of courses at the Bachelor's Degree Level such as Agriculture, Arts, Business Administration, Education, Engineering, Law, and Medicine, to name a few. Some of these universities also offer Masters and Doctorate programs. In addition to these conventional universities, there are two "open" universities, which have been established to expand opportunities for working people and secondary school graduates [Welcome to Thailand, 1997].

2.3 Information Technology in Thailand

As the education system in Thailand has evolved, so has Information Technology. In March of 1992, the Thai government took a major step in promoting Information Technology (IT) within the country by creating the National Information Technology Committee or NITC. This committee's duties are to prepare, facilitate, and monitor the implementation of IT. The committee consists of 22 members and is chaired by the Deputy Prime Minister in charge of economic and social development.

One of the specific tasks given to the NITC was to prepare and implement an IT policy and plan for the country. The policy covers areas such as human resources development, utilization of IT in the public domain, the research and development of a legal and national infrastructure, and public IT awareness. Included in Appendix C is an outline of a list of recommendations made by the NITC for the development of Information Technology in Thailand.

In 1995, the NITC wrote *Thailand IT 2000 - The National Policy on Information Technology Development*. In this policy, the NITC states the current Information Technology situation in Thailand (in 1995) and its problems, and proposes a plan to update, develop, and spread IT throughout the country. This plan urges the government to provide the primary driving force, and "harness the full potentials of IT," while attempting to prevent ill

consequences arising from such changes. Thailand itself must make use of IT and become a role model for other developing countries.

This policy explains that the use of IT (computer, telephone, television, e-mail, multimedia, on-line database, and other related technologies) will considerably alter the way Thais live, work, learn, and entertain. It will enhance competitiveness in business, industry, and trade with other countries, as well as develop the country socially. IT has the potential for expanding economic activity, democratic principles, wealth distribution, education, and healthcare across the entire country. Spread throughout the country, IT could also aid in reversing the migration of labor, reducing traffic and pollution in urban centers, and conserving natural resources and the environment.

If developed and applied in the wrong way, the policy states, IT can lead to negative consequences. Instead of bridging the gap between the rich and the poor, there would become classes of “information haves” and “have-nots” which would leave the poor even further behind than they currently are.

The NITC also declares that to make the dreams of IT a reality, three fundamental prerequisites are a necessity and must be in place, functioning together:

- A Nation Information Infrastructure (NII)
- A well-educated population and adequate IT manpower
- Good governance with a dare to dream and a resolve to act

These concepts are being implemented in present day Thailand, but several weaknesses remain to be addressed. In 1996, Thailand lagged behind considerably when it came to service quality, unmet demands, network utilization, quantity of computers and especially telecommunication. An example of this lag is that in 1996, on average, there was only about one telephone for every ten people in Thailand (cellular phones, however, are rapidly becoming available). In contrast, in the US, UK, Japan, and Australia, telephone

service has long been available to every home that requests it. If situations like this do not improve, Thailand may not see any benefits from the huge NII investment already underway [NITC, 1999]. For a more detailed display of the progression of computer use in the last few years, refer to Appendix B which contains two tables. The first table displays the IT Market of Thailand - showing how much money was allocated in Thailand from 1995 – 1999 towards the purchase of different types of computer hardware and software. The second table exhibits the Number of Computers in Thailand - showing quantity, in units, from 1995 – 1999 of different categories of computers in the country.

In order for the benefits of IT to filter into society, there is a need for satisfactory, well-trained people to design, install, operate, and maintain computers. However, a few trained experts are not enough. The population has to be well educated in this area as well. This idea is summarized in the following statement from the policy: “The greatest shortfall of all is in [the number of] software and telecommunications engineers and technicians, in addition to the general literacy and mathematical proficiency of the population at large” [NITC, 1999]. Substantial portions of this technologically illiterate population live in the slums of Thailand.

2.4 Thai Slums

“A slum is a settlement of low-income people occupying sub-standard housing or house-like structures with no security of tenure, and with virtually no access to public services” [Sasaki, 1999]. Slum areas provide homes that the city’s numerous low-paid workers can afford. In Thailand, there are several slum areas, Klong Toey in Bangkok being the largest, and the slum area in Karat, the second largest. The sizes of current slums vary from 42 to 2,000 families, with the average slum housing 247 families. In 1992, 10% of Thailand’s population lived in Bangkok, 20% of which lived in the slums.



Figure 2: A part of Klong Toey built under the highway

There were two major factors that contributed to the creation of the slum areas in Thailand. The first was called the “push factor.” The poverty of the agricultural regions, caused by severe droughts and other problems, “pushed” farmers toward urban areas. Second was the “pull factor,” where opportunities for work and earning money “pulled” agricultural workers into the big cities. After World War II, there was a large rush of people to urban areas due to these factors [Hata, 1996].

As hundreds of poverty stricken farmers rushed into the cities, clusters of shacks were built on wasteland. Employers had the convenience of a nearby pool of inexpensive labor, and workers living in the slum had affordable, although sub-standard accommodations near the job. As the city attracted more workers, the slums became more crowded and widespread, limiting space and forcing people to live in very constricted areas.



Figure 3: An alley in Klong Toey

There are five basic problems that the slums of Thailand face: living conditions, lack of money and education, legal problems, and housing. By American standards, the living conditions in the slums of Thailand are less than adequate. Many slums have no electricity, proper drainage system, or refuse collection. Typical homes are nothing but a few walls of old pieces of wood and a zinc roof.

Lack of money is the underlying problem in the slums, contributing to a deficiency of education. Even though kindergarten and primary schools are free, the uniforms, shoes, and school bags required for attendance are expensive and cannot be afforded by most Thai slum dwellers. Secondary school and Universities require considerable tuition, restricting even more Thais living in the slums. Of the lucky children who do attend school, many drop out early to obtain menial paying jobs, helping to support their families. Due to this lack of education and money, most slum-dwellers become unskilled laborers performing such jobs as driving, garbage collecting, street vending, or scavenging. A job of this sort provides a family of five with an average income of 200-300 Baht (\$7.00) per day, the minimum for survival being around 170 Baht per day (5,000 Baht per month) [Dalad, 2000].



Figure 4: A street vendor in Klong Toey

The Thai government owns a large portion of the slums; therefore, slum-dwellers must deal with several unique legal issues. Due to this ownership, most people in slum areas have no legal rights. When a person is born into one of these slums, there is a very good chance they will not have a birth certificate. Without such documents, it is extremely difficult for children to go to school or obtain a secure job.

Housing is another difficulty facing slum-dwellers. Eviction is a real possibility for many families since they live on government owned land and their homes are essentially built illegally. Even if a family has lived in an area for a very long time, there are no laws to protect their residency. There have been a small number of successful relocation programs performed by the government to move inhabitants to legal locations, but these programs are sparse and the slum-dwellers are opposed to the idea of moving. The slums are where they grew up, and are considered home.

2.5 Duang Prateep Foundation

Located in the heart of the Klong Toey Slum of Bangkok, the Duang Prateep Foundation (DPF) is a Non-Government Organization focused on the well being of slum dwellers. The DPF oversees a diverse array of projects, assisting the Klong Toey Community to combat problems facing them.

2.5.1 History

Prateep Ungsongtham Hata, “Angel of the Slums”, founded The Duang Prateep Foundation in 1978. Translated to English, Duang Prateep means “flame of enlightenment.” It is this flame, which is the Foundation’s symbol. The DPF offers a promise to help the slum community and the poor of the city, as well as poor people throughout the country, to the best of its ability. The DPF is recognized as the “legitimate voice of the urban poor” [DPF, A window on the slums].



Figure 5: Emblem of The Duang Prateep Foundation

Prateep Ungsongtham grew up in the slums herself, and set up the Foundation to help educate other slum dwellers, mainly children. The mandated six years of education is all that most slum dwellers receive, and Khru Prateep did not feel that this was enough. At the age of twelve, she started saving money earned from work, for her own higher education. She eventually made it to the University and felt that it was very important for people,

especially the slum dwellers, to be educated. For this reason, Khru Prateep opened the “One Baht School”, a school where parents could send their children, for one baht per day, to be educated in a safe environment. After a great deal of time and energy, it became an official school and therefore could not be disbanded by the government. This was the first step, but a major step, towards Khru Prateep’s ultimate impact on the Klong Toey Slum and its people [Hata, 1996].

The Duang Prateep Foundation was created with \$30,000 that Khru Prateep won when receiving the Ramon Magsaysay Award [DPF, 20 Years of the DPF]. This prestigious award is the Asian equivalent to the Western Nobel Peace Prize. Khru Prateep won this award when she was only 26 years old, making her the second youngest person to receive this honor, and a national celebrity. (The youngest person was the Dali Lama who was only 25 years old [Hata, 1996].) Upon her return to Thailand after receiving the award, 200 slum children and over 1,000 slum dwellers were waiting to greet her at the airport [Hata, 1996].

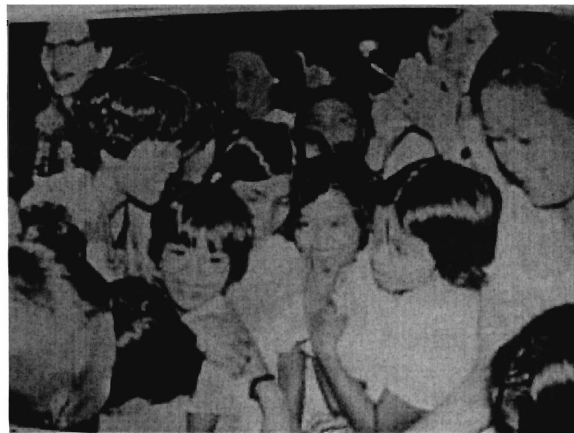


Figure 6: Children greeting Khru Prateep at the airport

The money Khru Prateep received from the Magsaysay Award was considered a large amount of money in Thailand and would have allowed her to buy a house outside the slum. Instead, Khru Prateep decided to spend this money on the children to whom she had

dedicated her life. With the advice of friends and family, Khru Prateep decided to set up the Duang Prateep Foundation [Hata, 1996].

2.5.2 Projects

In its 20 years of operation, the DPF has not lost sight of its original goal - to help slum dwellers, and more specifically slum children. Currently, the DPF runs 22 different projects in the areas of: Education, Health, Social Services, and Human Development. Some of these projects include: The New Life Project, Community Kindergarten Project, Slum Children's Art Project, Young Women's Group Project, Senior Citizen's Project, AIDS Project, Special Education Program for the Hearing Impaired, Educational Sponsorship, and the Credit Union [Duang Prateep Foundation Project List, 1999].

The New Life Project focuses on slum children who have problems with drug use, exploitation, abuse, and crime. The project allows these children to work and escape the dangers of the city in a rural and sheltered environment. In addition, the children have the opportunity to learn farming and vocational skills and work together in a spirit of cooperation. Young people return to the slums from the New Life Project ready to face the same challenges with new courage and hope.

Kindergartens are at the heart of the Duang Prateep Foundation's activities. Since its founding, the DPF has helped set up 15 kindergartens in slum areas. Currently, they are working with the Foundation for Rural Child Development to create more classrooms in the poor villages of Northeast Thailand. These kindergarten centers are not only schools, but also informal community centers, childcare centers, and a safe area within the neighborhood. The DPF does not run all of these centers; instead they oversee and advise them allowing the residents to be more involved and independent. As active participants in the development of their community, the people gain pride in the centers as well as in themselves [Duang Prateep Foundation Project List, 1999].

The motivation for The Slum Children's Art Project is based on the need for students to develop their minds, imagination, and creativity. After school, children can drop by and work with the Foundation's teachers in creating artwork. The teachers supply the materials and equipment, as well as advice and ideas.



Figure 7: Some of the children's artwork

The Young Women's Group Project aims to help undereducated teenage girls who are a vulnerable group in the community. Sixty girls, aged ten to seventeen, meet regularly on Saturday mornings to do handicraft work and discuss issues and problems facing them in the slums. It is very difficult for young women in Thailand to find a job, yet society influences their desire to buy a lot of things. The DPF feels that this program will help girls more smoothly adapt to adulthood and also avoid the temptation of substance abuse or other addictions. This project also helps teach girls about birth control, thereby decreasing the number of unmarried mothers who do not have the means to support themselves or a child. Another goal is to help protect young girls from financial temptations luring them to the sex trade of Bangkok [Duang Prateep Foundation Project List, 1999].

The infamous sex trade that has plagued the cities of Thailand has also fostered the growth of AIDS cases among slum dwellers. Consequently, Thailand has a very high AIDS population, until recently, the highest in the world. Fortunately, with the help of the AIDS

Project and related programs, whose focus is on education, the number of AIDS cases is slowly decreasing. The AIDS Project, established by the DPF in 1988, has attempted to educate the community on the transmittance of the disease through the circulation of pamphlets and distribution of condoms [Duang Prateep Foundation Project List, 1999].

The Senior Citizen's Project was founded for the benefit of this sector of Thai society. This project provides assistance with issues such as poor health, lack of income, and deficient social support. The senior center sponsors a social club for the seniors to interact with each other through exercise and making handicrafts [Duang Prateep Foundation Project List, 1999].

A survey conducted in 1986 revealed that many slum children were not attending school because of minor handicaps such as hearing impairment. The Special Education Program for the Hearing Impaired is a school at the DPF, established in 1986, to ensure that hearing-impaired children are not excluded from the national school system. The school fits a custom-made hearing aid to each child, which he/she keeps for life. This program helps integrate hearing-impaired students with non-hearing impaired students so that they have equal opportunity and can some day attend a normal primary school [Duang Prateep Foundation Project List, 1999].

The Foundation's Educational Sponsorship Program is currently helping over 7,000 children from poor households attend a state school. Two thousand five hundred of these children live in the Bangkok slums, while the others live in poor rural communities throughout Thailand. Sponsors make an annual payment to the DPF to help support a particular student's education, and in return receive a school and financial report every year with a letter from their child [DPF, A window on the slums].

The year 1994 brought a new and invaluable addition to the Klong Toey community - the Klong Toey Slum Credit Union. Assisted by the DPF, twenty-one slum communities

joined together in January to start this project with the hope that it would empower the urban poor. The Credit Union provides a way for people in the slum community to borrow money because they cannot obtain it from commercial banks. It also deters them from dangerous “loan sharks”. To take advantage of the Credit Union, people must pay an initial 150 Baht membership fee, and make a monthly deposit of 50 Baht thereafter [DPF, A window on the slums].

The continued existence of these programs shows that the Duang Prateep Foundation has not lost focus over the years. It has stayed true to its original goal of helping the poor community. The common thread among each of these projects is education, the main focus of the DPF, stemming from the original teaching philosophies of Khru Prateep.

2.5.3 Teaching Philosophy

The Thai education system is very formal in comparison to Western standards. It stresses correct behavior in and out of the classroom as well as respect for authority. In this well-disciplined program, teachers are rarely questioned. Western pre-schools and kindergartens are largely play-oriented, but in Thailand, education is a focus even for the three to five year old child. It is important for them to master the Thai alphabet, so homework is regularly assigned. Storytelling is also an integral part of the teachers’ curriculum for their kindergarten class [Plank City News, 1993]. The DPF structures their teaching style in a similar manner. The teaching methods and curriculum developed at the Duang Prateep Foundation kindergartens, though mainly traditional, are based on the needs of the children [Plank City News, 1993].

In addition to providing a safe learning environment, the DPF encourages the practice of personal hygiene and proper eating habits. Providing the child with good nutrition is a vital part of the typical day at school. Every day the children are given a balanced, nutritious meal, including soybean milk, high in protein. Undernourished children are given vitamin

supplements, necessary because many of these children may not receive these critical nutrients at home. It is not uncommon for children to lose weight over school vacations; therefore, health checks at the school are also performed. The intent of the school is to encourage the importance of healthy living at a young age so that the children will continue to grow properly. Furthermore, the children will ideally bring some of the lessons home, where standards may not be as high [Plank City News, 1993].

It is a known fact that the child's brain develops to 80 percent of its capacity by the age of six - indicating that this pre-school/kindergarten period is essential to the development of the child. The discipline and stress on learning for the three to five year old in Thailand may seem bizarre to the "farang" (foreigner), but it is a method of teaching that works extremely well in the 15 kindergartens of the Duang Prateep Foundation [Plank City News, 1993].

2.6 Teaching

The teaching philosophy of the DPF has been effective, but there are countless other ways to teach a child, and using computers with teaching opens many more possibilities. The following includes discussions of different methods of teaching, using computers to teach, using computers to teach young children, and teaching children basic computer skills.

2.6.1 Methods of Teaching

Maria Montessori

Maria Montessori, the first and leading advocate for early childhood education, remains just as much a controversial figure in today's education as she did 50 years ago. Her research has helped change the course of education [Seldin, 1996].



Figure 8: Maria Montessori

Born in 1870 in Ancona, Italy, Montessori grew up in an educated but non-affluent middle class family. At the time, Italy was a country most conservative in its attitude toward women. Opposed by both her father and the traditions of her country, she went to school for science to become the first female physician in Italy [Seldin, 1996]. She graduated from the University of Rome Medical School in 1896, taking her first job at the University, in the Psychiatry Clinic.

At this time, children with special needs were considered a medical problem and were treated in hospitals for the insane [Enright, 1997]. Visiting children in Roman insane asylums sparked Montessori's interest in the works of Jean-Marc-Gaspard Itard (1775-1838) and Edouard Seguin (1812-1880), French pioneers in the education for the mentally handicapped. She proceeded to read all the major works on educational theory of the past two centuries.

In 1899, Dr. Montessori was made director of the State Orthophrenic School (school for the mentally retarded). It was here that her work with special needs became so successful that most of her students could pass the state education exams. As many people pondered and celebrated this extraordinary feat, she wondered at its implication for normal children. She reasoned that if the mentally deficient children could do as well as normal children, then the normal children must be in an extremely poor state. It was at this point that Maria Montessori decided to devote her life to education [Enright, 1997].

Montessori's first Casa dei Bambini (Children's House) was opened in 1907. Here, she applied the methods and materials she had developed for mentally deficient children to those with normal intelligence. She also spent time observing and meditating on what the children did with her materials and what helped bring out their best learning and greatest enthusiasm [Enright, 1997].

Maria Montessori's method of teaching, and achievements at the Children's House were so successful that use of her method spread rapidly. By 1915, more than 100 Montessori schools had been opened in America and all over the world [Enright, 1997].

The Montessori Method

Dr. Montessori stated, "A child's work is to create the person she will become" [Enright, 1997]. To create this person, children must use their innate mental powers, but they first have to be free to use these powers. The Montessori classroom provides freedom for this reason, but it also maintains an environment that encourages order and self-discipline ("Freedom in a structured environment") [Enright, 1997].

Like Aristotle, Montessori recognized that the five senses must be educated first in order to develop the intellect. Consequently, she created many special learning materials from which concepts could be absorbed and fully understood. These materials were self-correcting – by using these materials, the child discovered for him/herself whether he/she had the right or wrong answer. This property of Montessori's materials encouraged the child to learn the concepts of facts and truth, not what was right or wrong according to adults [Enright, 1997]. For example, one of Montessori's most famous teaching tools was to have the child trace the alphabet with their fingers on sandpaper letters pasted on tiles. This enhanced sensory stimulation, so the child could not only see the letter as he/she traced it, but could feel the roughness of the sandpaper at the same time.

Montessori also believed that there is a “sensitive period” in a child’s development, when the child seeks greater stimuli, and can easily master a particular learning skill. The teacher’s job is to sense these periods in individual children and put the children in touch with the appropriate materials [Enright, 1997].

Montessori identified her “Planes of Development” (stages of growth) as: ages three to six, six to nine, nine to 12, and 12 to 18. These stages are the basis for the three-year groupings found in Montessori schools. From birth to age six, children are sensorial explorers – they study every aspect of environment, language, and culture [Enright, 1997].

Between ages six and 12, children become reasoning explorers, developing new powers of abstraction and imagination, using this knowledge to expand their world. It is vital that during this time the child carries out activities, which integrate acting and thinking. The child gains independence from their effort and they formulate their own answers for how and why things function as they do [Enright, 1997].

A radical concept of teaching adolescents was proposed by Montessori in another one of her books – *From Childhood to Adolescence*. The book outlines the changes children go through (in mentality and outlook) as they grow from childhood to adolescence.

In her writing, Montessori puts together observations and insights with her view of the importance of the child’s own work in self-development – “work by which each man creates the best within him” [Enright, 1997]. Her language is refreshing and inspiring and she always keeps in mind the magnificence of human development.

In the US, the Montessori method was largely forgotten for several decades, but in the 1950’s, a dissatisfied American mother, Nancy Rambusch, rediscovered Montessori. She began the “second-wave” of Montessori schools in the United States. Since then, there has been a phenomenal growth of these schools in America, but the movement is not generally recognized or promoted in university education departments [Enright, 1997].

Seymour Papert

Dr. Seymour Papert, another advocate of childhood education with a slightly different philosophy than Montessori, is a mathematician and early pioneer of Artificial Intelligence. He has written many books, including *Perceptrons* (1970), *Mindstorms: Children, Computers, and Powerful Ideas* (1980), *The Children's Machine: Rethinking School in the Age of the Computer* (1994), and *The Connected Family: Bridging the Digital Generation Gap* (1996). These books deal with children, computers and learning. Dr. Papert pursued mathematical research at Cambridge University, and also worked at the University of Geneva. He currently is the LEGO Chair for Learning Research at MIT, as well as the chairman of the advisory board of MaMa Media Inc. [Seymour Papert Home Page, 2000].

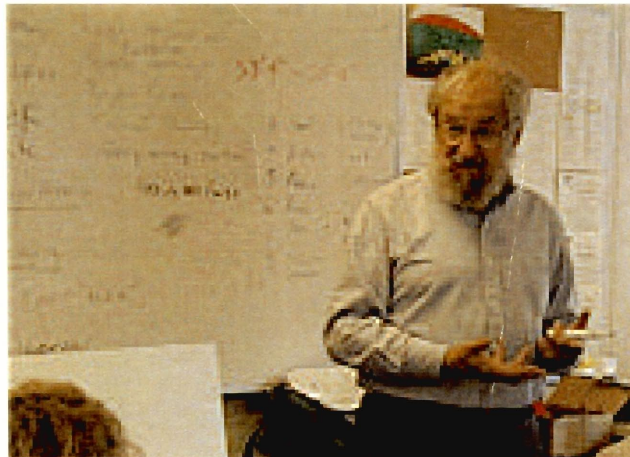


Figure 9: Seymour Papert teaching a class

Dr. Papert is also the inventor of the computer programming language, LOGO, developed specifically for children. This language allows the students to use a “turtle”, an image on the screen, to draw basic shapes with the computer. LOGO provides a virtual environment where children have the ability to enjoy and learn simultaneously. While

programming in LOGO, children are “learning a language for talking about shapes and fluxes of shapes, about velocities and rates of change, about processes and procedures. They are learning to speak mathematics, and acquiring a new image of themselves as mathematicians” [Transitional Realms, 2000].

One aspect of Papert’s philosophy is that people learn by actively constructing new knowledge, rather than having information “poured” into their heads [MIT Media Laboratory Projects, 2000]. Papert has labeled this version of education as *constructionism*. Constructionism is “built on the assumption that children will do best by finding (“fishing”) for themselves the specific knowledge they need” [The Children’s Machine, 2000]. Papert believes that through the computer, a child’s relationship with knowledge will change, producing a revolution comparable to that of the “advent of printing and writing” [The Children’s Machine, 2000].

Mindstorms [Papert, 1980] is considered to be a major breakthrough in education, introducing a very different outlook on how to teach children and how they can learn through the use of computers. Papert teaches that the computer should be thought of as a common tool, not unlike a pencil, being so familiar that it is used in every day tasks. The book goes on to say that children learn by relating to the familiar. Papert discusses how he grasped advanced math as a child by relating it to things that he understood. This philosophy is the foundation of his pedagogy; in order to successfully learn, children need to learn concepts which can be related to ideas they already solidly understand [Papert, 1980].

Papert applies this philosophy with the use of technology in education, in a way that is not considered mainstream. Although many educators feel that “technology should serve the curriculum, not dictate it” [Papert, 2000], Papert feels that technology should be the basis of the education program. In order to effectively teach, instructors need to be more involved in the technology process. A computer cannot simply be thrown into the classroom for a

teacher to use. A teacher should rework their entire teaching pedagogy, centering the curriculum around the computer. It is also important, according to Papert, that the computer be used for other purposes than simply web research and Internet communication. Computers are more beneficial when effectively incorporated into the learning process. In his opinion, too many educators do not understand the true significance that technology can play in education.

2.6.2 Using Computers to Teach

There has been heated controversy over whether or not computers can be effectively used to teach. Those who believe that computers cannot teach say that computers will never be successful because they are not compliant enough. Computer programs are written for a specific purpose, carrying out their duty, then finishing. There is no real intellectual transaction between the student and the computer. For example, the answer to a student's question may be different depending on the source of information. A teacher can provide an explanation and interact directly with the student, whereas a computer can respond with a programmed answer. Additionally, if the computer fails to understand the question, the answer may be erroneous or contain useless information.

Because of these limitations, many believe, erroneously or not, that a computer will never be able to replace a human being. However, this is not to say that a computer cannot be used as an effective teaching tool. Imagine, for a moment, that a teacher is preparing a grammar game for the class. The words of a logical sentence are each written on separate squares of paper. The squares are then shuffled around and the student's job is to put the squares back together to form a logical sentence. Now, imagine the teacher cutting up these squares for several dozen students. This job could become quite tedious. However, if there were a computer program that would take logical sentences and separate the words for the teacher, the students could then use the computer to reconstruct their sentences. In both

instances, the student would learn how to correctly format a sentence. However, the computer program helped save the teacher a lot of time and energy. Thus, using a computer to teach can be a very effective use of valuable time.

Now, consider a student's perspective. Suppose the student has a very important research paper to do. Rather than sifting through the card catalog at the library, the student can type a keyword into the computer and instantly see all the books that the library has containing that subject. Another method for research would be to use the Internet, or the encyclopedia that is on a CD-ROM. Thus, the computer can be a very useful tool for the student as well as the teacher.

2.6.3 Using Computers to Teach Young Children

Young children learn by experiencing situations, playing games, and by seeing, feeling, and hearing information. Teachers can use the computer to their advantage to encourage these types of learning. Research shows that learning is much more profound when several of the senses are used [McCormick, 1999]. When a child uses a computer to identify shapes, solve a math puzzle, or look at information, he/she is seeing, hearing, and touching all at once.

Young children can learn very important skills through the use of a computer. When children work in groups on the computer, they learn the age-old lessons of taking turns, manners, and patience. Children's curiosity is rewarded when they explore different functions of the computer. For example, just think of the delight on a child's face when they click on an image and it starts to move. Through exploration, they are having fun and learning important skills, such as typing.



Figure 10: Some of the young children outside the DPF

2.6.4 Teaching Basic Computer Techniques to Young Children

The world is beginning to separate the educated from the uneducated by one simple test – those who know how to use a computer and those who do not. People who know how to use computers are advancing in life, while others are losing ground - this includes those who live in slums. Hence, teaching slum children how to use a computer may be key to their success in life.

The introduction of slum children to computers has been explored by Rodrigo Baggio, a former computer science teacher in Rio De Janeiro. One night he dreamt, “I was at school, communicating with children from the favela [slum] on the Internet – and when I woke I decided I would try to make this come true. I thought maybe we could bridge the wide gap between rich and poor if we started discussing social issues on the Web” [Bornstein, 2000]. He initially tried to implement this idea through a Bulletin Board System (BBS), with

discussions on crime and social division between the middle-class students and the poor students in the favela. By Baggio's own admittance, this was a very naïve idea because favela-dwellers had no access to PCs [Bornstein, 2000].

Baggio felt so strongly about his idea that he gave up his job to lobby businesses for computer donations for the favelas. He successfully received many computers from generous companies. His next task was to teach people how to use them, since the residents of the favelas had no idea how to use these computers or what to use them for. Due to his tireless efforts, computer schools were created inside the favelas to teach the communities, keeping everything simple and basic to ensure use. In 1995, Baggio set up a committee, the Committee for Democratic Information (CDI), with friends who were also computer enthusiasts. This group used donated equipment and dozens of voluntary workers to install PCs in classrooms throughout the favelas.

Baggio's first school opened in 1995 in the favela Dona Marta in Rio De Janeiro. Inside this favela are many non-government organizations, such as religious groups, trying to educate citizens where their government fails. These groups have generally avoided working with technology. Baggio's effort is very significant in this respect, prompting a great deal of press coverage for the school, including pictures of barefoot, potbellied children inquisitively looking at keyboards and screens [Daly, 2000]. As of July 1998, Baggio had established 36 schools around Rio, each teaching between 180-190 pupils.

Baggio has even succeeded in bringing computers to a remote Indian Village that did not have electricity. The Guaranis of Sapukai are a 400-person tribe on a 5,200-acre plot of land, 100 miles west of Rio. The Indians felt that they needed to learn more about the outside world. They wanted a "ayu ryrurive," meaning "box for accumulating language" - a computer. To solve the electricity problem, Baggio brought in a gasoline-powered generator to operate the four computers. Through the CDI, the Indian Bureau, and the Indigenous

Missionary Council, Baggio was able to install the computers and provide training for the village's five teachers [Bornstein, 2000].

The CDI received its biggest boost in November of 1997, when President Bill Clinton stopped by the favela da Mangueira while on a state visit. He took part in an online chat between the slum's star pupils and students at a US school. A few months later, the school received a large package with a White House stamp on it, containing ten Pentium computers. Baggio hopes that this donation is only the beginning, and that more international investors will help the project after this initial gesture by the President.

3. Methodology

The main goal of this project was to implement a program at the Duang Prateep Foundation to teach young children of the Klong Toey slum basic computer skills. To achieve this goal, many individual tasks needed to be completed, such as educating the teachers, establishing a location for the computer lab, acquiring computers, setting up the lab, designing and implementing the teaching program for the children, and laying the ground work for future continuation of the project.

After initially meeting with the DPF to hear their plans for the project, a course of action was decided. First and foremost, an effective, thorough, and enjoyable teaching program had to be designed to introduce the teachers and children to computers. The training program for the teachers was to be the initial implementation. Before the children's teaching program could begin, an area for the new computer lab needed to be chosen. Immediately following the purchase of the new computers and the construction of the lab, children's sessions were to commence. It was then imperative that the security and maintenance of the lab be addressed. In addition, a daily journal was kept, to track progress, as well as provide accurate documentation for further continuation of the project. Accomplishing these steps would set the groundwork for the ongoing education of these young children in computer technology.

3.1 Location of the Lab

The kindergarten building across the street from the DPF was chosen as the location for the computer lab. This room had previously been a classroom, but after the arrival of the computers, it was designated solely for their use. All windows and doors to the room could be locked, thus making it secure. Furthermore, the DPF itself is guarded, providing additional security for the lab.



Figure 11: Room for kindergarten lab

3.2 Acquiring Computers

There are over 250 children attending school at the Foundation, making it necessary to purchase as many computers as possible. Using grant money donated for the project, eight computers were purchased. Because each class had approximately thirty children, eight computers allowed between one-quarter and one-half of the class to use the computers at any given time.

Upon our arrival in Bangkok, computers were priced at several different stores in Pantip Plaza, a large computer super-center in the city. The quoted prices were very competitive and the computers were eventually purchased from Hardware House, Inc. See Appendix F for a financial breakdown of the computer systems that were purchased.

3.3 Setting up the lab

In addition to providing the secure space, the DPF supplied desks and chairs needed for the lab. Accompanying the physical installation of the computers, a local area network (LAN) was created. The LAN provided the lab with hardware and software sharing capabilities. For example, a single printer is easily shared among all of the computers in the lab. Further, the network allowed for remote software use, via joint CD-ROM drives.

Although having access to the Internet would one day be extremely beneficial for both children and teachers, the prohibitive costs have prevented the connection thus far. In Thailand, people must pay for local calls, meaning that the DPF would not only be paying for Internet time, but also for the telephone use. For the DPF, a basic ISP would provide 40 hours of online time per month at a rate of 1,362 Baht (\$36.80). Any Internet use over the allotted 40 hours would be at additional cost to the Foundation [Internet Thailand, 2000].

In the future, if the DPF is financially capable, it could connect to the Internet using the LAN that has already been installed. One computer could dial onto the Internet and share the connection with the seven other computers.

3.4 Maintaining the lab

To ensure the long-term success of the project, it was essential for the DPF to have a technologically competent person available to maintain the computers. Upon arrival in Bangkok, we were introduced to our liaison, Khantong Dalad. Khantong serves as the Head of the Information-Service Center at the DPF; he is quite proficient with computers, able to fix most problems that may arise. To aid Khantong in network maintenance, a manual was created, explaining the network setup of the computer lab and walking him through troubleshooting techniques (see Appendix J).



Figure 12: The project group with our liaison, Khantong Dalad

3.5 Software

Because it is as vital as hardware, software was procured to provide a broad spectrum of entertaining activities for learning. The choice of software for the children was based on a desire to familiarize them with computers, and at the same time provide them with both an educational and enjoyable experience. The selected software emphasizes universal characteristics such as colors, shapes, and images. Our liaison thought it would be beneficial to introduce the children to English as well as Thai software. Therefore, four English language and two Thai language software packages were purchased.

3.5.1 English Software

Microsoft Paint

Packaged with Microsoft Windows, Microsoft Paint is a drawing program that allows the user to draw pictures, create shapes, use color, and add text. It is an excellent program to help the children gain practice with mouse skills including clicking, double-clicking, and clicking and dragging. Additionally, it promotes creativity, similar to giving a child a blank piece of paper and a box of crayons, a common pre-school activity.

Elmo's Art Workshop

“Elmo’s Art Workshop” is similar to Microsoft Paint, but is designed exclusively for children. It includes four activities: a coloring book, painting program, sticker activity, and dress-up application. The benefits of this software are analogous to those of Microsoft Paint: the children gain experience with the mouse and express themselves creatively. They also learn how to open and close a program and recognize how mouse movements correspond to screen movements (hand-eye coordination). “Elmo’s Art Workshop” uses numerous sounds, which stimulate auditory learning. Further, the software is made enjoyable by use of recognizable, appealing characters such as Elmo and Big Bird of Sesame Street. Although Thailand does not have its own version of Sesame Street, the English version can be seen on

international television. Commercial merchandise can also be found throughout Thailand, featuring the Sesame Street characters, thus making the characters easily recognizable to Thai children.



Figure 13: The opening screen of “Elmo’s Art Workshop”

Music Maker

Similar to “Elmo’s Art Workshop”, “Music Maker” has a variety of activities within the program including a sing-a-long, instrument exploration, dance activity, and song creation, all featuring Sesame Street characters. This program promotes musical creativity and provides intense visual stimulation, vital for keeping the child’s attention. The “Music Maker” software is appropriate for use at the DPF because it corresponds with Khru Prateep’s 1993 establishment of music classes in her kindergartens [Plank City News, 1992].



Figure 14: The opening screen of “Music Maker”

B- Jig Saw

This program, downloaded from the Internet, is an application that allows the user to create jigsaw puzzles from pictures on the computer screen. A picture is cut into jigsaw puzzle-shaped pieces and scattered around the screen. The mouse is then used to click and drag the pieces of the puzzle back together. The children can create jigsaw puzzles from pictures they create in Microsoft Paint or pictures included with the software. Jigsaw puzzles promote many skills for children such as shape recognition, problem solving, and process of elimination [Ross, 1999].

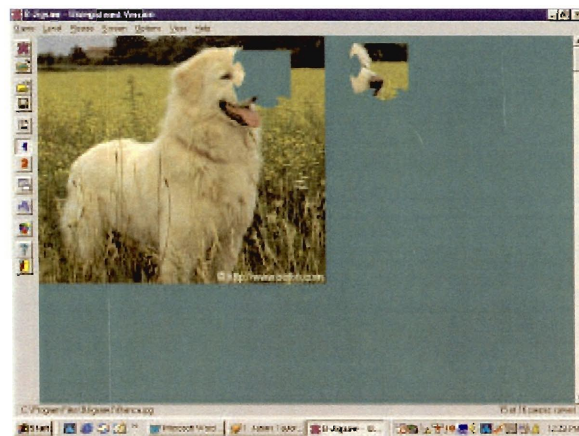


Figure 15: A nearly completed jigsaw puzzle

3.5.2 Thai Software

Animals in the Zoo

“Animals in the Zoo” focuses on teaching young Thai children (ages three to five) the English alphabet by showing animals whose names begin with each letter. The program contains an activity that displays a picture of an animal next to its name. The first letter of the name is missing and the child has to correctly complete the word.

This program is very suitable for the children because they not only gain practice with the English alphabet, which is taught in class, but they also learn about animals.

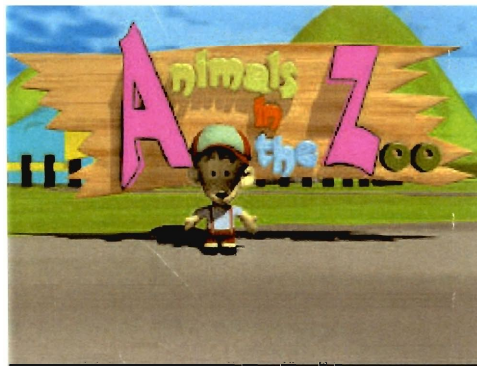


Figure 16: The opening screen of “Animals in the Zoo”

Magic Kids: Fun School

The other piece of Thai software purchased, “Magic kids: Fun School,” is for children aged three to seven, aiming to develop skills in areas such as counting, the Thai alphabet, the English alphabet, number and size comparisons, colors, telling time, and shapes. There are eight different activities from which the child can choose.

- **Greater Than/Less Than** – The child is shown groups of objects and has to choose which group has the greatest number.
- **Counting** – The child clicks on a number between one and twenty while the computer shows the corresponding number of objects, such as apples, and counts them out loud.

- **Thai Alphabet** – The child is shown the Thai alphabet, which he/she can click on to hear each character pronounced out loud. A word and picture is then displayed, beginning with the character.
- **English Alphabet** – This activity is the same as the Thai Alphabet, but using the English Alphabet.
- **Length** – The child is shown two objects and is prompted to choose the longer.
- **Colors** – The child clicks on a color, which is then said out loud, while an object of that color is shown.
- **Telling Time** – The child is shown a time (in text) and has to choose a clock showing that time. This is done in 12-hour am/pm time.
- **Shapes** – The child can click on a shape, which is said out loud. Also, the child can play a game in which he/she has to match a given shape to one of the shapes in a group.



Figure 17: The menu screen for “Magic Kids: Fun School”

As can be seen from the previous descriptions, the English software was more “play” oriented, while the Thai software focused on traditional education.

3.6 Computer Education Program

The computer education program was broken into two distinct sections: teaching the teachers and teaching the children. Even though the overall goal was to familiarize the children with computers, it was extremely important to spend a substantial amount of time educating the teachers.

While the new computer lab was in the process of being constructed, the teachers were taught using a pre-existing lab, with four older computers and a whiteboard. The

teachers completed four, three-hour sessions to learn fundamental computer skills. See Appendix D for a more detailed version of the teaching schedule.



Figure 18: Pre-existing lab used for teachers

After the new lab was created, the children attended two sessions, each an hour and a half long, with a break in the middle of each session. The kindergarten teachers ran these sessions while the project group observed and assisted the students.

3.6.1 Educating the Teachers

The sixteen kindergarten teachers and assistants were divided into four groups, each containing four teachers. For each group, four separate sessions were held. They were taught basic skills and, at the same time, were introduced to software and teaching methods, to use in teaching the children.

Lessons

During the lessons a variety of subjects were covered, ranging from basic computer skills, to using the computer to teach children. The booklets accompanying these lessons can be found in Appendix E. Each lesson was three hours long and followed this format: 1)

review of previous lesson, 2) new material, 3) individual exploration, and 4) quiz on the material presented.

In Lesson One, the components of the computer such as the power button, mouse, keyboard, and monitor were presented. The teachers also learned where each component was plugged into the back of the computer. Additionally, they were introduced to Microsoft Paint, learning the role of each button in the program to draw pictures and shapes. They experimented with these buttons and saved their work to the computer. At the conclusion of the class, the first quiz was administered.



Figure 19: Teachers studying the back of the computer

Lesson Two presented more concepts while building on the content of the first lesson. The teachers learned about the different computer drives, directories and how to create them, file extensions, and finding files. They were also shown the Microsoft Word program. Familiarity with Word will allow them to utilize this program in creating teaching plans or posters.



Figure 20: Lumyai Sumpachanyasathit, the school principal, hard at work

Lesson Three continued with Microsoft Word skills, covering some of the more advanced features such as inserting clip art, cutting, copying and pasting. The pupils also learned how to print the work, which they created in the first two lessons. The session ended with an introduction to CD-ROMs and the first piece of children’s software, Elmo’s Art Workshop.

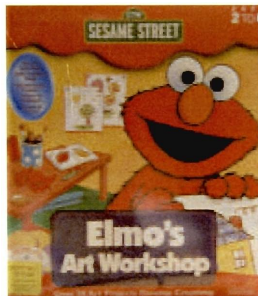


Figure 21: Elmo’s Art Workshop software

Lesson Four was reserved largely as a review session to ensure that all concepts from the first three lessons were clearly understood. Suggestions were taken to discover anything else the teachers wished to learn. Another important topic covered was how to restart the computer if it “froze.” Finally, the teachers voiced their ideas for the children’s sessions, listening to ours as well. Also introduced in Lesson Four were the rest of the software packages: B-Jigsaw, Music Maker, Animals in the Zoo, and Magic Kids: Fun School.

Incorporating Teaching Strategies

In the training sessions with the kindergarten teachers of the DPF, the teaching philosophies of Maria Montessori and Seymour Papert were incorporated. These pedagogies were employed with the adults in preparation for teaching the kindergarten children. It was hoped that the teachers and project group could then use the same methods when working with the children.

Maria Montessori realized that to successfully develop the intellect of the child, all of his/her senses must be stimulated. In the training sessions, many of the teachers' senses were used: auditory by hearing the sounds coming from the computer's speakers, touch by moving and clicking on the mouse and keyboard, and sight by watching pictures and words appear on the screen.

Two other topics that Montessori stressed were that children should progress at their own pace and choose many of their own activities, to harness their full potential. In the lessons with the teachers, ample time was allotted for reviewing each topic, allowing each teacher to progress at his/her own pace. In addition, "free time" was given, for them to choose their preferred activity and practice less than perfect skills.

One of Seymour Papert's main philosophies when teaching children is to teach by relationship. This method introduces a new concept by relating it to things the child is already familiar with and fully understands. This strategy was incorporated in many ways in the lessons with the teachers. In explaining the directory structure of the computer, the file system was related to a file cabinet. Just as one can place files inside a file cabinet, digital files can be placed inside a directory. Controlling the mouse pointer on the screen was compared to a common bicycle. Just as the bicycle travels in the direction that the wheel turns, the pointer moves in correspondence with the mouse. Clicking and dragging is

analogous to the use of a pencil (or eraser). Pressing down and moving the hand produces a mark. Another analogy was the comparison of files and file extensions to a person's first and last name. People in the same family have different first names, but the same last names. Files of the same type, such as .bmp files, have the same file extension, but different file names.

Another of Papert's philosophies is to teach the student that the computer can be thought of as a tool, not unlike a pencil. This philosophy was incorporated when the teachers were taught practical uses for the computer. Just like a pencil can be used to compose a letter, the teachers learned that Microsoft Word can be used for the same purpose.

3.6.2 Educating the Children

Since there was not a specific number of classes planned for the students, the classes were not as structured as those held for the teachers. Some of the teachers, who had gone through the teacher education program, ran the lessons for the children, while our role was to oversee and help students needing individual attention. Two sessions with the children were held before our departure.

Lessons

A lesson plan booklet was created for the teachers to use during the first session with the students. This booklet was essentially a summary of the concepts the teachers wanted to introduce in this first session. It consisted of pictures, and can be found in Appendix E. The next lesson was taught without the aid of a booklet, with hope that the teachers would become accustomed to teaching without them, creating future lessons on their own.

The first lesson lasted an hour and a half with a 15-minute break in the middle for the children to play. The kindergarteners learned the importance and function of dust covers, as well as the components of a computer, with time at the end to explore with Microsoft Paint. The second lesson with the children lasted the same amount of time and gave the children

more practice with Microsoft Paint, while introducing the concept of double-clicking on an icon to open a program.



Figure 22: Children exploring the computer

Incorporating Teaching Strategies

Similar to the teachers' sessions, the philosophies and teachings of Maria Montessori and Seymour Papert were incorporated in the teaching programs with the children. The teachers stimulated many of the children's senses, as Montessori taught, when working with them on the computers, just as when they, themselves, were trained. The goal was not to rush or move too slowly for any child. The children were allowed to discover many things about the computer on their own by using trial and error, another teaching method of Montessori.

Montessori's idea of tracing sandpaper characters motivated the idea of outlining Thai characters on the screen with the mouse. Files were created in Microsoft Paint for each of the Thai characters in dotted form. As a dotted character was displayed on the screen, the child was shown how to click and drag the mouse around the character to make a line. These characters were large, having arrows pointing to where the tracing should begin. Three copies of the dotted character were visible on the screen so the child could use repetition to

gain practice. This repetition was not only an excellent way to study their Thai and English alphabet, but it also promoted practice with the mouse.



Figure 23: Some of the dotted characters that the children traced

Seymour Papert’s philosophy of teaching by familiarity was incorporated with the children much in the same way as with the teachers. Analogies to crayons and bicycles were used for showing them how to use a mouse. Also, when playing in Microsoft Paint or Elmo’s Art Workshop, the children were urged to draw simple pictures familiar to them, such as their house, family, pets, school, or teacher.

Papert’s philosophy of thinking of the computer as a tool was also incorporated when teaching the children. The children were shown that they could use the computer for practical purposes such as drawing pictures. Further, they were shown that they could use the computer to learn about the alphabet, numbers, telling time, comparisons, etc.

3.7 Assessments

Assessments were distributed to the teachers in order to obtain feedback on our teaching program. These assessments provided information useful in analyzing the teaching successes or failures and will also be used to improve future computer education. The questions asked for information about our teaching styles, the teachers’ computer knowledge, and their overall satisfaction with the program. The full assessment can be seen in English and Thai in Appendix I.

3.8 Keeping a Daily Journal of Activities

The project group felt it necessary to keep a daily journal as well as a list of contacts, due to the number of tasks completed and the numerous people contacted throughout the project period. Daily accomplishments and problems were entered in the journal as well as a list of objectives for the next day. Keeping this journal digitally allowed for editing and multi-person access, as well as permitting easy backup. See Appendix G and Appendix H for the Journal and List of Contacts.

4. Results and Analysis

This section addresses and examines the project outcomes and achieved goals. Topics include analyses of: the labs, the teacher education program, the student education program, teaching styles, the assessment results, and finally, the social and language differences which related to the project.

4.1 Analysis of the Labs

In order to implement this project, a proper working environment for both the teachers and students had to be created. A pre-existing computer lab for training the teachers was updated and the equipment for the children's lab was purchased and assembled. Once the children's lab was constructed and working properly, it was immediately put to use. The following section evaluates the utilization, condition, and resources of the two computer labs, as well as the teachers' and students' reactions toward them.

4.1.1 Teacher Lab

Before the pre-existing computer room could be used for the training sessions with the teachers, several preparations were made. Nonfunctioning computers were removed from the area and the four working computers were placed in a group, each on its own table. This placement provided the four teachers in each training session with their own workstation and plenty of desk space for note taking. The four working computers were adequate to start the training sessions. Upgrades were made to some of them so that all were 166 MHz Pentium systems with 16 MB of memory, a monitor, keyboard, sound card, speakers, and mouse. See Appendix F for a detailed list of the upgrades.

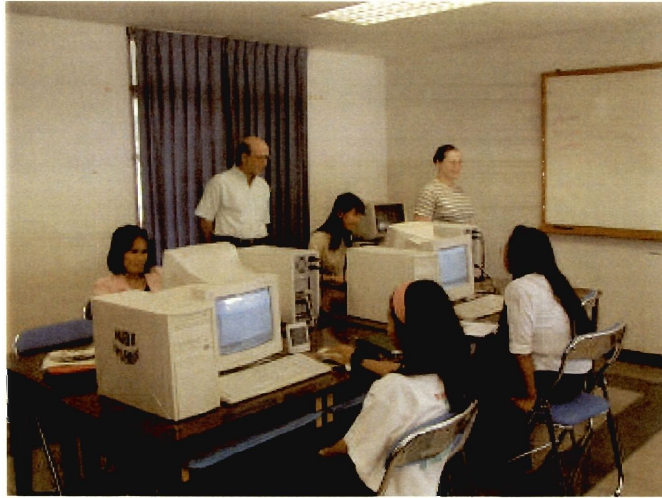


Figure 24: Four teachers working in the teacher lab

When the teachers entered the room on the first day of their training sessions, they were quite surprised to be able to use their own computer. Some of them seemed timid at first about touching the computers, fearing they might make a mistake or break something, but once the training started, they became more comfortable and confident with the hardware. Their increase in familiarity and comfort with the computer caused a boost in their curiosity and inquisitiveness. They would try exploring the software on their own, learning from their successes and failures. By the end of the program, the teachers were helping each other, showing that they were confident in what they learned.

One recurring problem for the teachers was an occasional computer freeze (a software error in which the computer stops responding). Regardless of our internal frustration with the computers, we calmly reassured them that it was not their fault and they needed to be patient while restarting the computer. Another problem facing the project group was that the computers in the teachers' lab were too slow to run some of the software that was purchased for the children. Showing the teachers the software on a laptop computer brought from the United States solved this dilemma.

4.1.2 Student Lab

Upon their arrival at the DPF, the eight new computers were assembled in the designated classroom, each on its own child-sized desk. A few of the kindergarten teachers assisted in the unpacking and construction of the workstations. Prior to the training sessions, these teachers lacked significant exposure to computers and were apprehensive about even touching the hardware. Now they were enthusiastic and able to help assemble the systems.



Figure 25: One of the teachers helping to assemble the lab

Two printers were purchased for the computer lab, a laser printer for black and white printing and an inkjet printer for color printing. Each of the eight computers were connected together in a Local Area Network (LAN), allowing file and printer sharing between them. By creating the LAN, the sharing of CD-ROM drives between computers was also made possible. Sharing one CD-ROM drive between all eight computers caused the programs to run unacceptably slow, therefore causing us to discover a better method. Two computers, each on opposite sides of the lab, were chosen to have their CD-ROM drives shared with the three computers closest to them. This drive sharing enabled four computers to simultaneously use one CD.



Figure 26: The finished children's computer lab

Before the arrival of the new computers, the classroom was only tolerably secure, with locks on the screen doors and windows. The DPF was conscious of this lack of reliable security, and installed a steel grate behind the windows and a roll-down metal wall encasing the front doors of the room. As an added precaution, security kits were purchased connecting all eight computers together by a series of strong steel cables attached to the monitors and CPU towers.

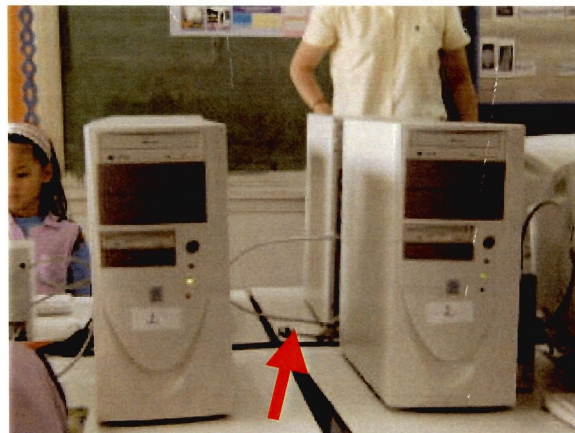


Figure 27: Computers connected together with steel cables

Spending time with the teachers on the new computers was necessary before beginning the sessions with the children. They were unfamiliar with the higher speed of the new computers and needed to learn how this directly affected their handling of the computer.

Also, new concepts had to be addressed, such as safety and correct conduct for the children in the lab, how to use the printers, and how to use a shared CD-ROM drive. Although we planned a special session for the teachers to familiarize them with the computers, many of them had already gone into the computer lab on their free time and practiced using the programs introduced to them in the training sessions. Impressed with the speed, the teachers typed documents, created pictures in MS Paint, printed their work, and played with CD-ROM programs. Their enthusiasm and comfort with the new lab indicated that they were adequately ready to begin teaching the children.

When the time finally came for the children to work on the computers, they were not hesitant about using them (unlike the teachers). When the teachers weren't giving them direct instructions, they were quick to take the mouse and explore on their own. Since two children sat at each computer, some would squabble over who got to use the mouse at a given time, while others would swap seats frequently. The children as a whole, though, were very well behaved in the computer lab. It seemed as though they understood the importance of the machines and did not abuse them.

4.2 Analysis of the Teacher Education Program

The teacher education program was implemented over four weeks. During this time, the teachers completed twelve hours of hands-on education, learning basic computer skills and teaching methods to use with their students.

4.2.1 Observations of Teachers' Responses

Lesson One

When the education program began, the teachers were asked about their previous exposure to computers. Most of the teachers had little or no experience with computers,

putting them all at virtually the same level throughout the program. It was evident, however, that some teachers had more typing experience than others.

During the first session, the teachers were taught the components of a computer, while Khantong Dalad provided them with Thai translations when such existed. Throughout subsequent sessions, they were often prompted for the names of these components. At first, the teachers would look around at each other and peek at their manuals for the answer. By the end of the fourth session, they spoke in unison with confidence when asked to identify parts of the computer.

Microsoft Paint was also introduced during the first session. The teachers practiced with this program frequently. Starting out hesitantly, drawing only lines and shapes, they gradually became more confident and independently explored features of the program. They also drew pictures, some basic, others a bit more complicated. A common picture drawn was a house.



Figure 28: One of the teachers finishing a picture of a house

Lesson Two

Many new concepts were presented in Lesson Two. Consequently, it was primarily taught in the style of a lecture rather than the exploratory method previously employed. One member of the project group taught the new material, allowing the teachers to take notes in

their manuals. The two other group members and Khantong walked around the room to confirm that the teachers performed each task correctly. The teachers did not seem to mind being observed while they worked. In fact, they would often ask questions or seek reassurance.

Another program presented was Microsoft Word. As with Microsoft Paint, the teachers were given freedom to explore the program on their own. Some would write one or two sentences and others would write large paragraphs. Several teachers also showed interest in text formatting, making the text bold or changing the color, while others concentrated on content which was primarily in Thai.

Some teachers commented that the information in Lesson Two was taught too quickly. The pace was therefore adjusted for other groups. Concepts that did not fit in the allotted time were delayed until Lesson Three.

Lesson Three

Lesson Three consisted of additional practice with Microsoft Word, an introduction to printing, and instructions on the use and care of CD-ROMs. The teachers were shown the correct way to handle the CD and took great care to follow our directions. The CD used in this lesson was "Elmo's Art Workshop", the first of the four CDs introduced to them. Becoming engrossed with the software, the teachers had to be notified when the session was over.

Lesson Four

The first half of Lesson Four was a review for the teachers, giving them practice in all the skills learned in the first three lessons. A technique that continually challenged them was double-clicking. Usually, about three of the four teachers would have trouble with this skill. It was not a conceptual issue; they understood that they needed to click twice quickly. It was a physical skill, simply requiring practice.

In the second half of the lesson, they were introduced to the rest of the CD-ROM software. The teachers were brought into a conference room to see the software on a large television screen rather than on a small monitor in the computer lab. Each teacher was allowed to use the software, while the rest of the teachers observed. When asked their opinion, the teachers said the Thai and English programs were totally different experiences. They thought the English software was more lively and fun, while the Thai software was more focused on education. They agreed that all would be excellent for the children to use.

4.2.2 Results of Quizzes

Both written and oral quizzes were given to the teachers. A written quiz was administered at the end of both Lessons One and Two and an oral quiz was given during Lesson Four. Appendix E contains a copy of the quizzes. In an informal and relaxed manner, the teachers were asked many questions about the lessons, occasionally receiving encouraging help from the project group. Despite the relaxed atmosphere, it was apparent that the teachers were still slightly nervous at the prospect of a quiz. The written quizzes were not formally corrected, but instead used as a reference when providing feedback to the teachers. If a teacher answered a question incorrectly on the oral quiz, he/she would usually just smile and giggle and be corrected by another teacher. If no one knew the answer, a hint would be given.

4.3 Analysis of Student Education Program

While the project group was in Thailand, implementation of the student education program began. During the sessions with the children, the teachers incorporated what they learned in their training sessions into their own teaching styles. There were two children seated at each computer, taking turns using the mouse, thus allowing sixteen students to be in the lab at once.

4.3.1 Observations of Students' Responses

As 16 five-year-olds filed into the computer lab for the first time, their teacher told them (in Thai) to be seated and fold their hands in their lap. The children responded obediently and seemed very eager to hear what the teacher had to say. The first question asked of them was whether anyone had seen a computer before. (This was the same question asked of the teachers during their first session). Some children responded, saying they had seen a computer at their father's office or at the DPF, but this was the first time any were given a chance to use one.

The children were first shown how to properly use the dust covers - folding them neatly into a pile after removing them. They practiced folding the covers while the teachers explained that the computers had to be covered up every night. For the next twenty minutes, the teacher explained the names of the computer parts, pointing to a component and repeatedly saying the name in the same manner she had been taught in the training sessions. The children then repeated the word in unison while pointing their fingers at the corresponding part. This action was repeated for the CPU, keyboard, mouse, monitor, and speakers, with occasional interruptions to quiz the students. During these quizzes, the students would look around at their classmates for the answer. If no one could remember the name of the component, the teacher would give hints until the children remembered. By the end of the session, at least one child would know the answer when prompted for the name of a component.



Figure 29: Children learning the name for a monitor

After learning the parts of the computer, the children had the opportunity to use Microsoft Paint. The program was started for them because the teachers felt it was necessary for them to first get practice with the mouse before teaching the task of how to open a program. Once the program was started, the children were allowed to independently explore while the teachers and the project group walked around to assist the children in maneuvering the mouse, drawing shapes, fixing mistakes, and coloring. The children seemed to most enjoy experimenting with different colors.



Figure 30: Two children learning to draw lines in MS Paint

The second session with the children went very much like the first, but skills were improved upon. By the end of the session, children could double click without difficulty,

allowing them to open Microsoft Paint on their own. They also showed proficiency in using the file menu to close a program. In the second lesson, use of Paint was extended to incorporate language lessons into the students' exploration of the computer. The children were told to trace pre-made dotted Thai characters. This idea was from Maria Montessori, who had her students trace out dotted letters on a piece of sandpaper. Not only did the children greatly enjoy this activity, but they were also learning how to write their characters.

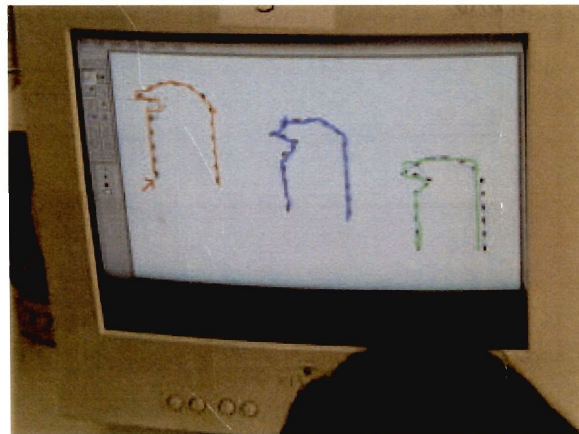


Figure 31: The first character of the Thai alphabet traced on the screen by the children

4.4 Analysis of Teaching Styles

During the lessons, different teaching styles were melded together by the individual members of the project group, incorporating the teaching philosophies of the widely known child educators, Seymour Papert, and Maria Montessori. When explaining difficult concepts to the teachers, the teaching style used most frequently was lecturing. A member of the project group stood in front of the class and talked about topics in the lesson plan (e.g., disk drives, creating directories, finding files), and often demonstrated by drawing pictures on the whiteboard. The class listened to the translation, and took notes in their booklets. After the lecture, they were given time to practice these concepts, under the guidance of the project team and liaison. During the lecturing, analogies were made to things already familiar to the

teachers such as directories to file cabinets, the mouse to a pencil, and file names and extensions to first names and last names, incorporating a philosophy of Seymour Papert.

Providing one-on-one assistance was often helpful in the classroom. This "individual attention" method was feasible since there were generally one or two people per computer. Sometimes the teachers needed help with Microsoft Word or Microsoft Paint, or with double-clicking an icon to open a program. Two different types of individual assistance were practiced by the team members. The first method involved walking around the lab and providing brief but adequate assistance to any who needed it. In the second method, a member of the project team would sit between two teachers for a long period of time and provide exclusive help. The project group would often show the correct movements of the mouse by guiding the hand of the teacher with their own. Sometimes it was necessary for the teachers to first watch, then repeat the movements themselves.

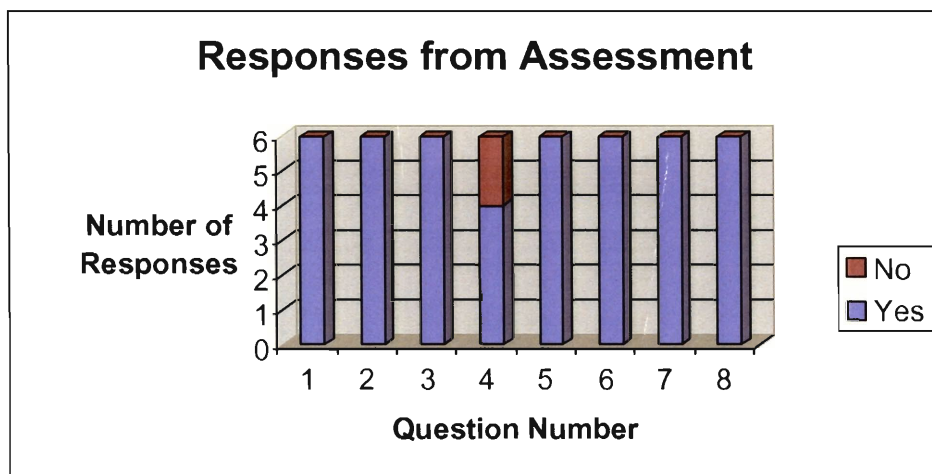
Repetition was effective in explaining a particular function or concept. The English word for the concept would be repeated while it was demonstrated on the computer. Through this technique, the teachers were correlating the name to the functionality, while learning the English word for it, a process our liaison thought was important. This repetition technique was used in Lesson Two, when the teachers were learning the concept of highlighting (selecting text) in Microsoft Word. The word "highlight" was repeated by members of the project team, while showing them how to highlight words with the mouse. By the end of Lesson Two, the teachers were all saying the word "highlight" out loud to themselves while selecting text.

For a substantial amount of time at the beginning and end of class, the teachers independently practiced the concepts that were taught to them in the current or previous lesson. During that time, the teachers chose the program that they most wanted to practice, and discovered many things on their own, learning what did and did not work. This technique

was used and taught by Maria Montessori as well as Seymour Papert. Montessori felt that the child, or student, could get the most of his/her learning with self-initiated investigation. Papert calls this method Constructionism.

4.5 Results of Assessment

An assessment was created for the teachers to evaluate different aspects of their training program: its effectiveness, the teachers' progress and satisfaction, and our teaching styles. This assessment was originally written in English, and then translated into Thai by our liaison. Both versions can be viewed in Appendix I. Of the twelve assessments handed out, six were returned to us. Of the 16 questions asked, eight required a yes or no answer, while the other eight asked for opinions. The quantitative questions (yes or no) returned encouraging results, which are graphically represented below.



The quantitative questions displayed in the graph are:

Do you know:

- 1) the components of a computer?
- 2) how to start a program by yourself?
- 3) how to correctly shut-down the computer?
- 4) how to create a directory?

- 5) how to find a file?
- 6) how to save your work?
- 7) how to print?
- 8) how to use a CD-ROM?

Their only lack of knowledge was in creating directories. This is a concept that could be emphasized more in future classes. All teachers understood the remaining concepts, previously determined by the group as fundamental for basic computer operation. The fact that all of the teachers felt confident in their abilities shows that the classes were helpful. A suggestion made for improvement in the training program was to increase the length of class. The six teachers' answers stated that they wanted and needed more time as students. This showed that they were not afraid to learn, and were willing to be taught new concepts. Despite their feeling of deficient practice time, they still felt they had enough knowledge to start teaching the children, which was the goal of the teacher education program.

Unfortunately, in the questions allowing more detailed answers, many of the teachers only provided one or two words. An example of this was in question twelve: "What did you think of the teaching styles of: Melissa, Jennifer and Michael?" The typical response to this question was "good" or "friendly." The answers were not as thorough as the group would have liked, but were expected because of the personal relationships that had been built with the teachers, and the non-confrontational characteristic of Thai society.

4.6 Analysis of Social Differences Affecting the Project

As described in Section 2.1, there are many differences between Thai and American cultures. A number of these differences became evident in the daily interaction with the Thais during the teaching sessions. These include Thai social norms such as non-confrontation, suppressed anger, and the existence of social hierarchy.

Non-confrontation became an issue early, when making sure that everyone understood the material. In Western education, it is uncomfortable, but acceptable to single out a person to ask if he/she understands the material, but the Thais are sensitive with this issue. Putting a Thai “on the spot” by asking if he/she understands, especially in a confrontational manner, makes a Thai “lose face”. Therefore, rather than singling someone out, questions were asked such as “Does everyone understand?” or “Are we going too quickly for you?”.

Showing anger is frowned upon in Thailand. This issue frequently arose in the teaching sessions when a computer would freeze, forcing a reboot. Most people who have worked with a computer before know how frustrating this can be. Getting red in the face and mad at the computer may seem natural to those from the West, but showing frustration demonstrates a lack of self-control in Thailand. We handled this issue by pointing at the computer and saying “mai dii” (not good). Khantong was asked by the group to tell them that it was not their fault.

The Thai culture emphasizes a social hierarchy, which is measured in the areas of power, wealth, professional rank, age, merit, and birth [Holmes et al, 1997]. The Thai people are aware of where they fit into this hierarchy. Being “farang” (western foreigners), it was not clear where we fit into this hierarchy in a teaching situation with the kindergarten teachers. The teachers had age in their favor, but we had superior computer experience. Despite our confusion of the hierarchy, there was a mutual respect between us, the teachers, and the liaison.

4.7 Analysis of the Language Difference Affecting the Project

The biggest hurdle to overcome was the language barrier. The project group knew very little Thai and the teachers knew only a little English. Everything said in class was translated, working out well when the project group lectured, but posing a challenge for the

exploration period at the end of class. If the teachers had a question, they would try to ask a nearby team member, but often Khantong would have to be called over to translate. This language difference proved to be an educational experience at both ends. The teachers picked up some English words and there would often be a short break in the session for them to teach a Thai word in return. One commonality between the project group and the teachers was the language of the computer. A computer is called a “computer” in both English and Thai, with a slightly different pronunciation. This language of technology was, at many times, the most effective means of communication.

5. Conclusions

This section concludes the paper by providing a brief summary. It then goes on to offer recommendations for future continuation of the project.

5.1 Summary

The largest slum in Thailand, Klong Toey, is an environment where a child's chance of success is low, due to a lack of education and resources. Through the Duang Prateep Foundation's educational programs and public aide, the children of the Klong Toey slum have a greater opportunity for a better life. In modern society, knowledge of technology provides even more opportunity, while at the same time separating the information "haves" and "have-nots" [NITC, 1999]. Solutions for this knowledge gap are better education in Information Technology and increased IT resources among the less fortunate. The goal of this project was to introduce young slum children to basic computer skills, thereby setting the groundwork for an ongoing project aimed at helping them to better compete in a modern technological society.

In order to accomplish this goal, many issues had to be addressed. Principal among these, was the acquisition of computers. The computers already possessed by the DPF were inadequate to run software for the children, prompting the purchase of eight new computers exclusively for the kindergarten. Another issue was the creation of a training program for the teachers at the DPF, since they had little or no computer experience. This training was essential so the teachers could then work with the project group, and later on their own, to teach the children about computers.

The teacher education took place over four weeks. Training sessions enabled 16 teachers to learn computer skills necessary for teaching the children. The kindergarten

education was begun while the project group was still present, providing teachers with a source of help and advice in the initial stages.

Providing inspiration for much of the work of this project were the efforts of Rodrigo Baggio with his work in the favelas (slums) of Brazil. Our efforts to bring computers into the Klong Toey slum and to educate the teachers and children of the DPF paralleled some of his accomplishments. These trained teachers will continue to pass on their knowledge to the children, sustaining the computer education process and positively impacting their future.

5.2 Recommendations and Future Work

The new computer lab has a great deal of potential and can be a major asset to the DPF if used to its full potential, i.e., keeping the lab in constant use. The project team believes that this lab can help many more people than just the children of the DPF. Evenings, when the children have left school, would be an optimal time for adult and young adult education with the computers. This education would allow other people, who have not had such experience, a chance to work with computers and also to increase their future opportunities.

It would be beneficial for all teachers and aides at the DPF, as well as members of neighboring schools, to go through the same lessons as the original 16 teachers. The teachers felt, according to their assessments, that the lessons were very helpful and gave them fundamental understanding of the computer.

We feel that this computer lab should be connected to the Internet in the near future. Although costly, this connection would give the community members access to the vast amount of resources and contacts available worldwide.

As the current group of students moves to public schools, they need to be continually exposed to computers and computer skills. Obtaining such resources will pose a challenge to their schools. A computer donation program from local businesses to the DPF would

continue the currency of the labs. These types of programs, currently set-up in Boston, Massachusetts and other large cities throughout the world, enable businesses with older functional computers to donate them to charitable organizations, receiving a tax deduction in the process. This computer donation program is a possible way to maintain the students' exposure to and progress in technology as they continue through school.

As mentioned, there are other avenues to be explored through the expansion of the computer lab and the continued implementation and development of the computer education program. Completing the teacher training program and beginning the student computer education at the Duang Prateep Foundation has been a small step in improving the likelihood of success for children in Klong Toey. It serves as a model for similar projects not only in Bangkok, but in other areas of Thailand and throughout the world.

6. Appendices

A. Communications

A.1 Response from Khru Prateep – 12.3.99

Dear Dr. Strage,

I am sorry that it has taken so long to get back to you again concerning “Bridging the Technology Gap”. I regret that discussions at this end have been slowed by people being away from the foundation at different times.

We are keen to introduce use of computers at the Duang Prateep Kindergarten. However we are unsure about some of the details. In particular, there is concern at this end that some of the objectives as outlined in the draft proposal are over ambitious for kindergarten children. The feeling here is that the children should be introduced to computers through educational play. At the same time basic care of the computer can be taught but more advanced activities such as internet use, word processing, keyboard skills might be too advanced for kindergarten children, or could be introduced at the earliest to children in the final year of kindergarten. We would favour first using Thai language software although it might be possible to introduce English language software at a later stage. I understand that there is Thai language software available for kindergarten children. It might not be as exciting as English language software but it would be perfectly adequate.

We presently have five computers available for kindergarten use. Four of them are the same Compaq 486 models. They have Windows 95 installed but have no speakers or CD roms and only 8 ram. The fifth computer is one which is being used for administration in the kindergarten. It is running Windows 3.1 and only has a small hard disc. We have a room at the kindergarten which could be kept for computer use. Some of the teachers have a certain amount of computer experience but there is not a high level of expertise.

Upgrading the computers and purchasing the software is going to cost some money. We do not have any budget available for this at the present time. We are looking forward to having the three students from WPI with us next month. I hope that they will enjoy being here and that they will be able to start a programme of computer activities at the Duang Prateep Kindergarten.

Yours sincerely,

PRATEEP UNGSONGTHAM HATA

Secretary General

A.2 Response from Henry Strage to Khru Prateep 12.13.99

Thank you for your up date.

I cannot disagree with anything you have said and am delighted hat we will have some computers to get started with. That saves us some time in hunting down hardware.

The WPI team is there essentially to do a kind of stage one ' Feasibility test 'and get something going. I have briefed them and will be in touch with them too. The fact that teachers have some computer time is great.

As far as the budget goes I have explained to the team that I will provide what is needed to get started So when they figure out exact what is essential at this stage they will be in touch with me. . And the volunteers from McKinsey should be able also to help with hard ware and contacts.

Thank you for letting us use your kindergarten as a stage one testing site. This will I am sure be the beginning of a great contribution and will grow to meet many other needs .

Regards,

Henry

B. Tables

B.1 IT Market of Thailand

Value in Million Baht

	1995	1996	1997	1998	1999 forecast
Hardware					
Large Servers	1,050	1,100	739	300	200
Medium Servers	800	759	760	380	288
Workstations	600	630	336	161	121
Personal Computers	11,598	13,361	13,988	7,522	7,739
Special Purpose Equipment	462	375	336	140	151
Data Communication Equipment	914	1,200	1,500	700	950
PC Peripherals	5,614	6,388	7,679	2,748	2,724
Subtotal Hardware	21,758	24,638	27,595	13,596	13,667
Packaged Software					
System/software/utilities	1,240	1,600	1,977	1,235	1,211
Application Tools	561	769	1,064	473	464
Middleware				290	280
Application Solutions	2,715	3,265	3,810	3,128	3,272
Subtotal Software	4,516	5,634	6,851	5,126	5,227
IT Services					
Maintenance Services	1,443	1,814	1,955	2,045	2,088
Professional Services	3,468	4,800	6,245	5,184	6,127
Subtotal Services	4,911	6,614	8,200	7,229	8,215
Total IT Market	31,184	36,885	42,646	25,953	27,109
Annual Market Growth %		+18	+16	-39	+4

Source: Association of Thailand Computer Industry (ATCI), Association of Thai Software Industry (ATSI), and Computer Association of Thailand (CAT-VG), 1999

B.2 Number of Computers in Thailand

Quantity in Units

	Prior to 1995	1995	1996	1997	1998	1999
Large Servers	125	17	20	14	5	4
Medium Servers	1,000	200	230	240	100	90
Small Servers	500	600	750	1,900	1,100	1,200
Workstations	1,000	1,500	1,800	1,000	400	350
Personal Computers	500,000	271,300	312,540	289,000	174,000	195,000
Total	502,625	273,617	315,340	292,154	175,605	196,844
Accumulated	502,625	776,242	1,091,582	1,383,736	1,559,341	1,756,185

Large Servers: General purpose and high-speed scientific computers with a price of over US\$ 1 Million

Medium Servers: Traditional supermini-class and some midrange computers with a price range of US\$ 100,000 – 1 Million

Small Servers: Servers for control, communication, peripheral, database, and network with a price range of US\$ 2,000 – 100,000

Workstations: Technical computers with powerful graphics (such as SUN, HP Apollo, Silicon Graphics), usually UNIX bases.

Personal Computers: All types of personal computers including notebook computers.

At the beginning of year 2000, there will be approximately 1.76 million computers in Thailand.

Source: Association of Thailand Computer Industry (ATCI), Association of Thai Software Industry (ATSI), and Computer Association of Thailand (CAT-VG), 1999

C. NITC Recommendation Outline for IT

This is an outline of a list of recommendations made by the National Information Technology Committee for the development of Information Technology in Thailand.

1. Build a fair National Information Infrastructure
 - 1.1 Start a 5-year rural communications expansion and modernization program
 - 1.2 Ensure a reasonable share of the benefits be given to the rural region
 - 1.3 Establish an independent telecommunications regulatory body
 - 1.4 Review and reform the existing telecommunications and other related acts.
2. Invest in the People (eliminate shortage of IT manpower and poor IT education of the people)
 - 2.1 Implement a National School-Informatization Action Program
 - 2.2 Establish a National Interactive Multimedia Institute to oversee the development of educational courseware and application software.
 - 2.3 Intensify IT manpower production at all levels
3. Enhance Government Services
 - 3.1 Launch a Nationwide Government Informatization Program
 - 3.2 Make IT planning an integral part of the annual government budgeting exercise and IT policy research an on-going effort
 - 3.3 Support the development of a strong local information industry
 - 3.4 Promote the support electronic means for citizens and businesses to interact or trade with government, or among themselves, or with the world community.

D. Teacher Training Schedule

Teacher Training Schedule

Jan 17 – Jan 21

MONDAY(Lesson 1)	THURSDAY(Lesson 2)
9-12 Group 1	9-12 Group 1
1-4 Group 2	1-4 Group 2

Jan 24 – Jan 28

MONDAY(Lesson 3)	THURSDAY(Lesson 4)
9-12 Group 1	9-12 Group 1
1-4 Group 2	1-4 Group 2

GROUPS 1 AND 2 COMPLETED!

Jan 31 – Feb 4

MONDAY(Lesson 1)	THURSDAY(Lesson 2)
9-12 Group 3	9-12 Group 3
1-4 Group 4	1-4 Group 4

Feb 7 – Feb 11

MONDAY(Lesson 3)	THURSDAY(Lesson 4)
9-12 Group 3	9-12 Group 3
1-4 Group 4	1-4 Group 4

GROUPS 3 AND 4 COMPLETED!

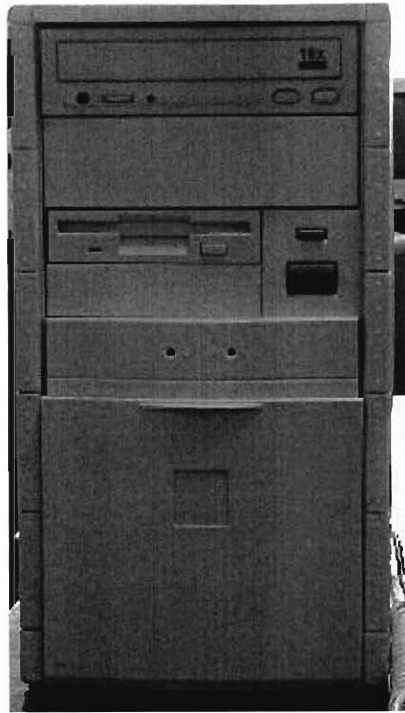
E. Lesson Plans

Basic Computer Skills



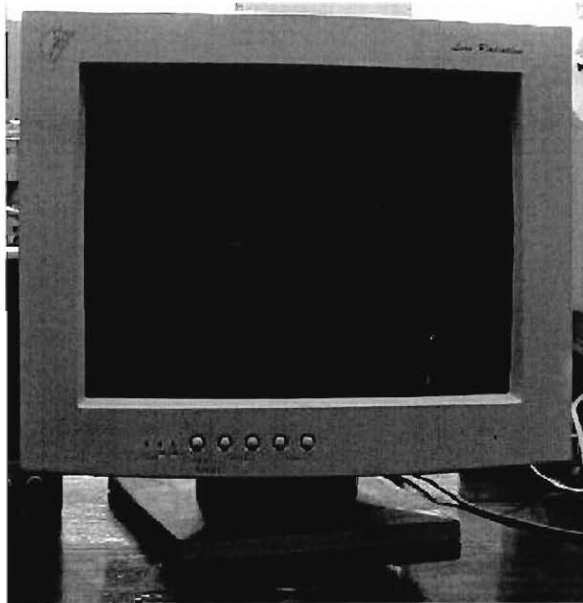
Lesson 1 For Teachers

The Parts of a Personal Computer (PC)



CPU

Inside this case is where all the
work gets done.



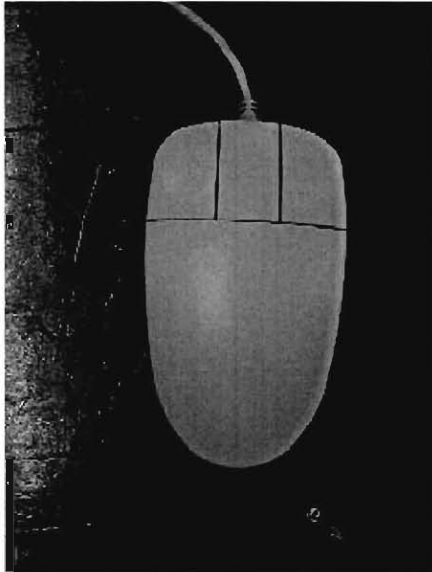
Monitor

The monitor is similar to a television screen. This is where you see the pictures and text.



Speakers

Sound comes out of the speakers. You can adjust the volume of the speakers.



Mouse

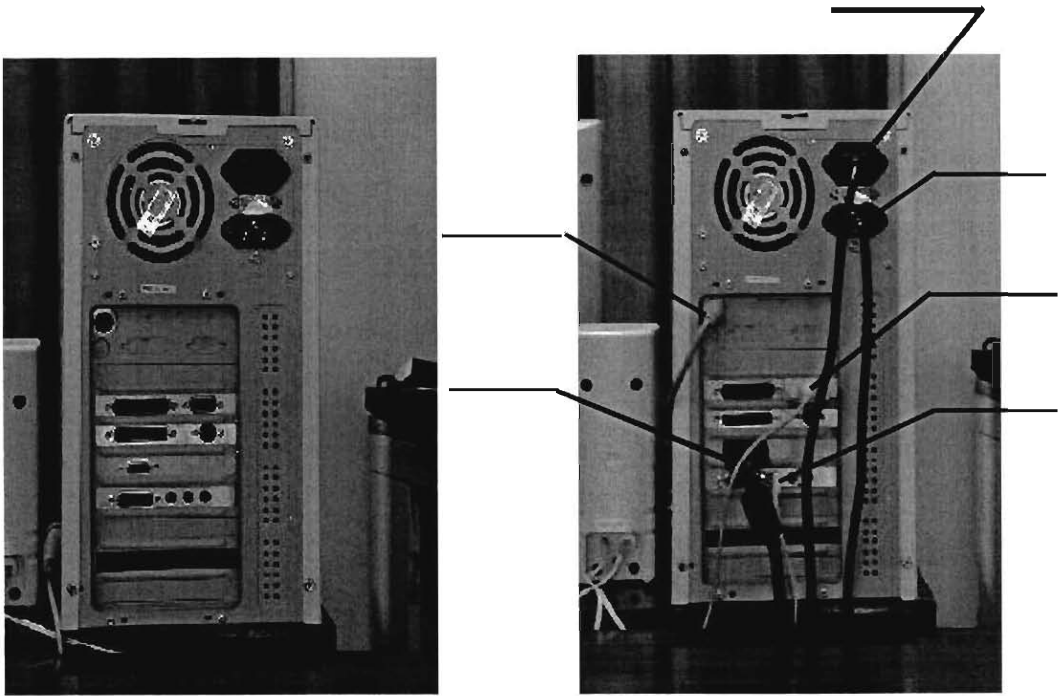
The mouse is used to move the pointer on the screen. Moving the mouse moves the pointer. Clicking on the mouse will perform many functions on the computer such as starting and stopping programs.





Keyboard

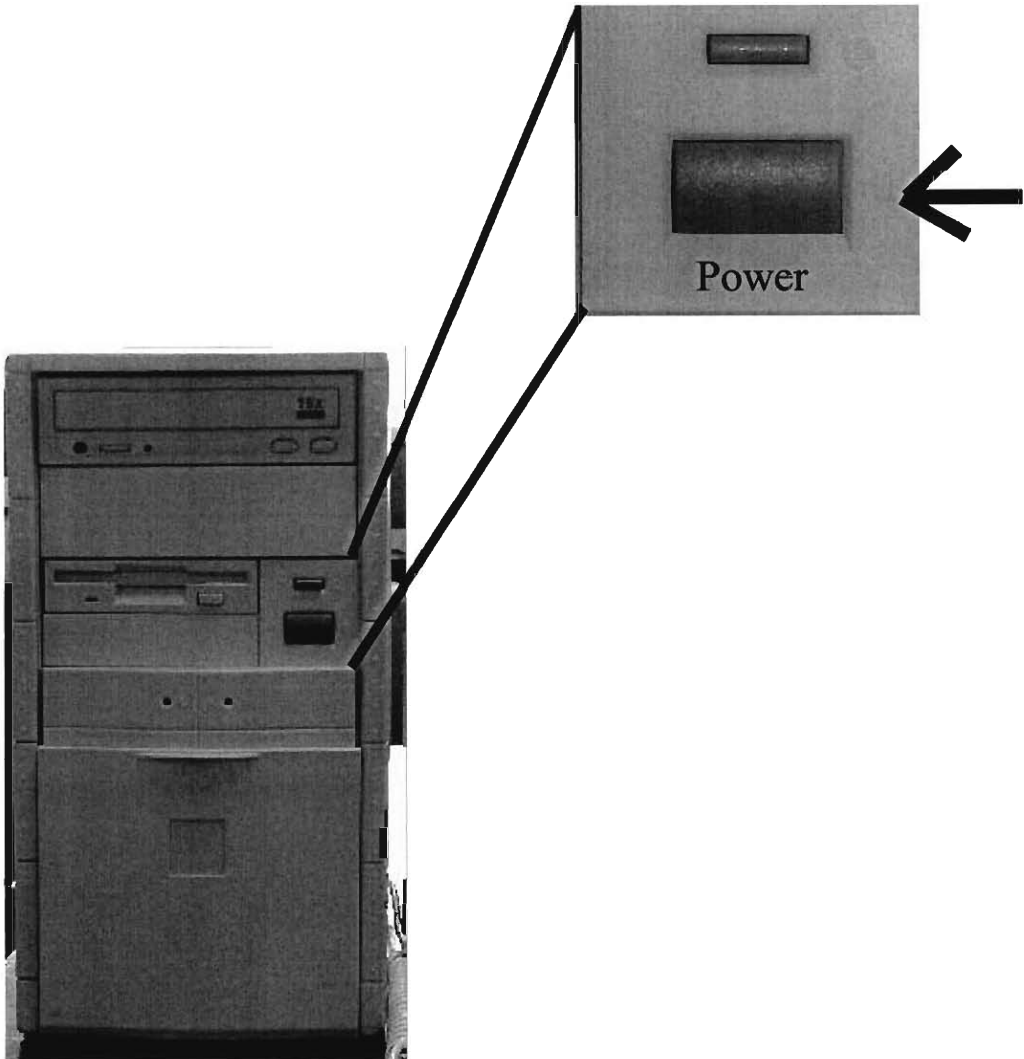
The keyboard on a computer is similar to a keyboard on a typewriter. It is used to type text to the screen.



Back of the computer

In back of the computer, various things get plugged in such as the keyboard, mouse, speakers, monitor, and power.

Now that you know the parts of the computer, let's turn it on and use it. To turn it on, press the power button located on the front of the case.



While the computer is loading up, you will see a series of screens while the computer runs tests. This will take a few minutes. When you see the following screen, the computer is ready to be used.



You can use the mouse to do lots of things on the screen.
This is the correct way to hold the mouse.



Try moving the mouse back and forth and watch the
pointer move on the screen.

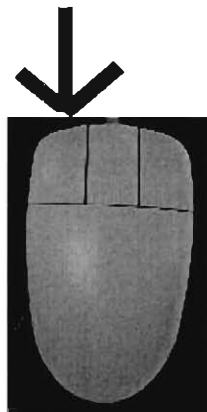
Now, let's start a program. Find the little picture that looks like this.



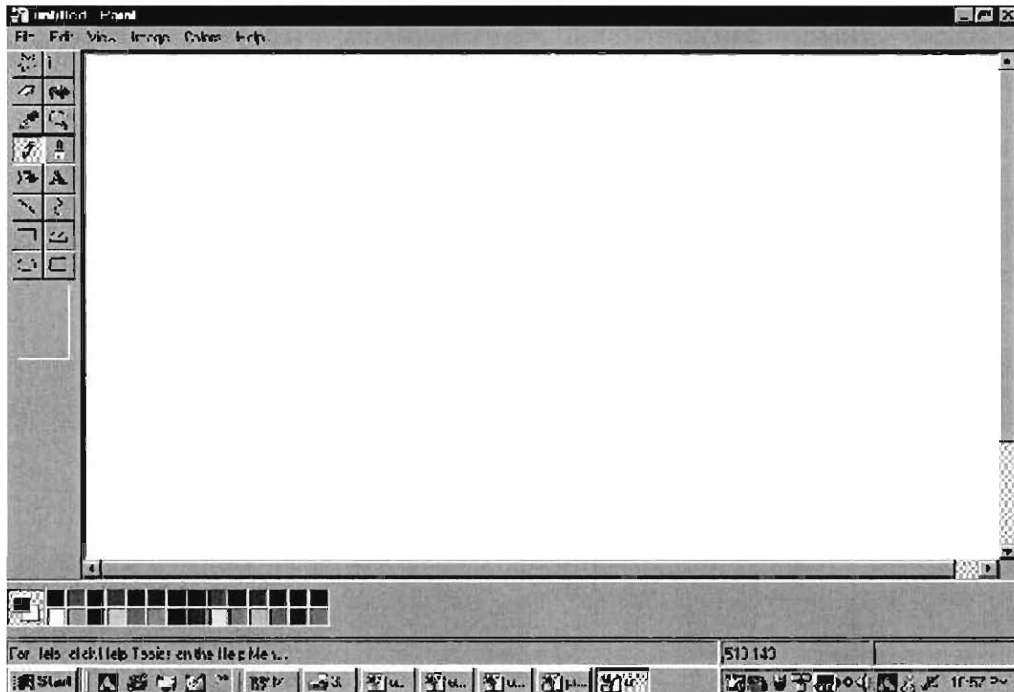
This is called an icon. As you can see, there are lots of them on the screen and each one does something different.

Using the mouse to move the pointer, place the pointer on top of the icon.

Now, press the left-most button of the mouse twice very quickly. This is called **double-clicking**.

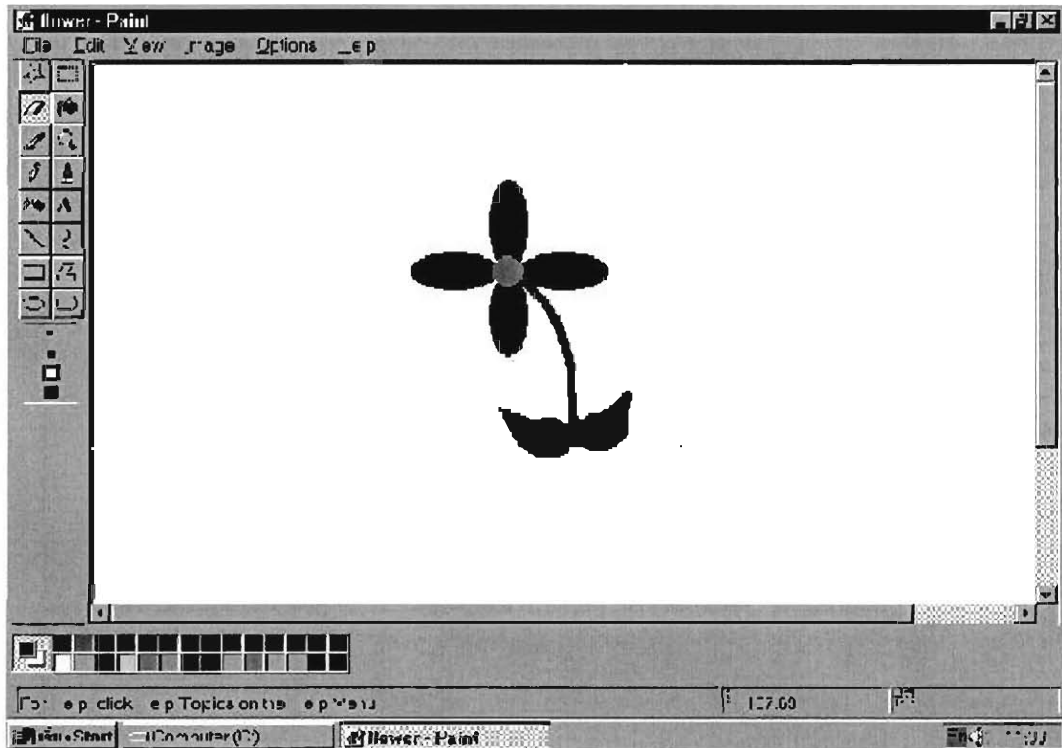


When you double-click, it should start up the Microsoft Paint program. Your screen should look like this.

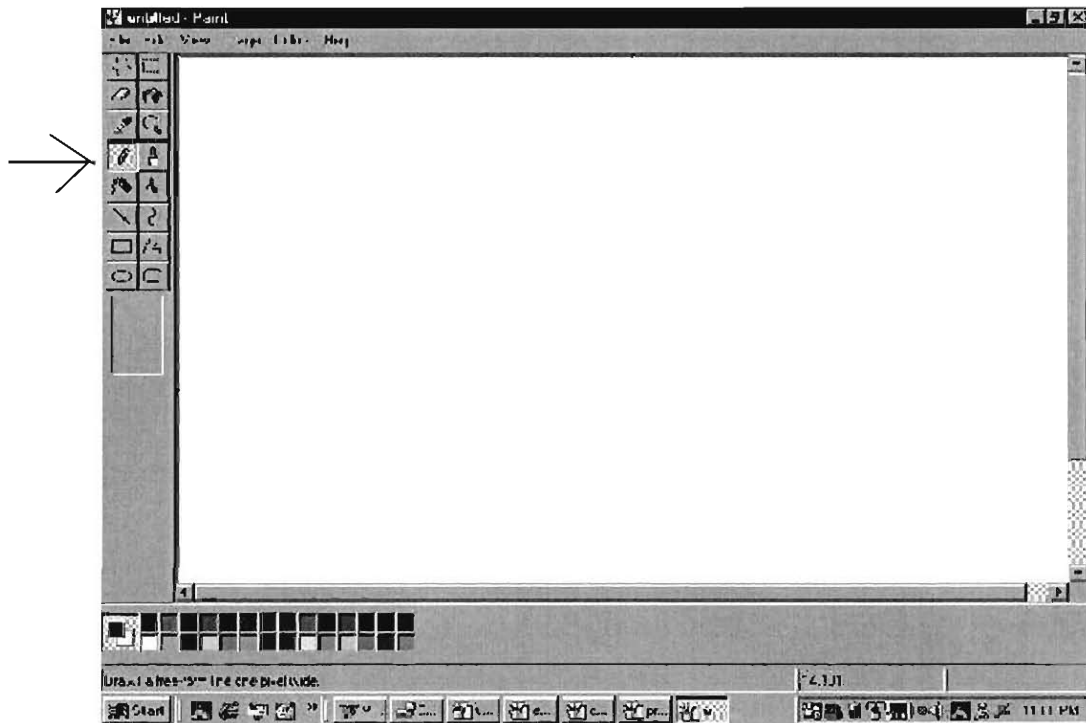


This program can be used to draw pictures. It will be fun for the children to use.

Here is a sample of a picture that you can make with Microsoft Paint.

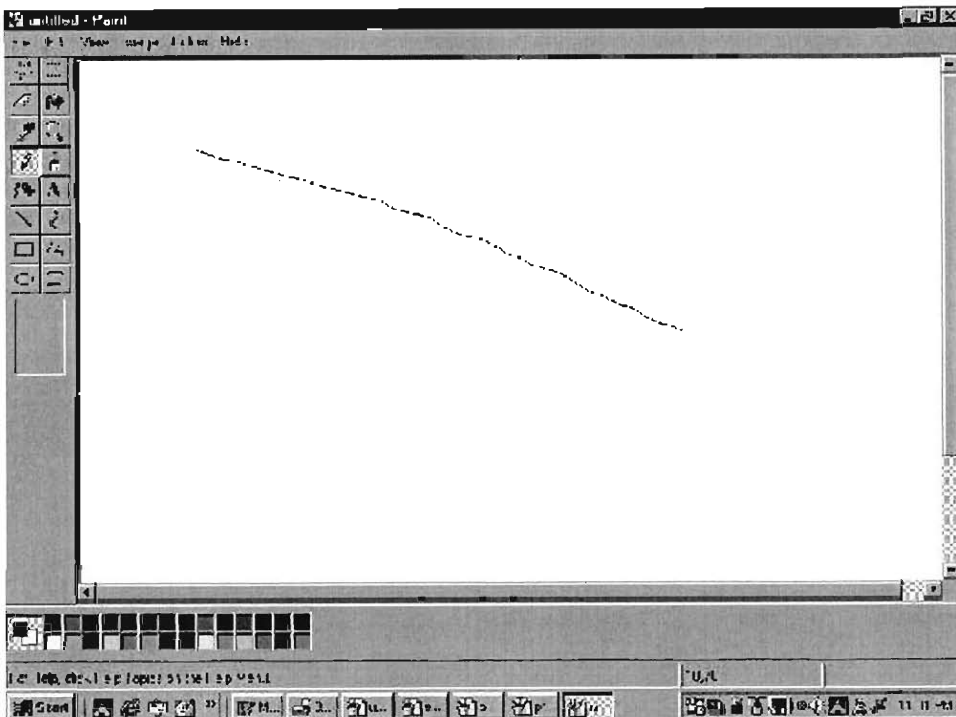


To draw a picture, click on the picture of the pencil.

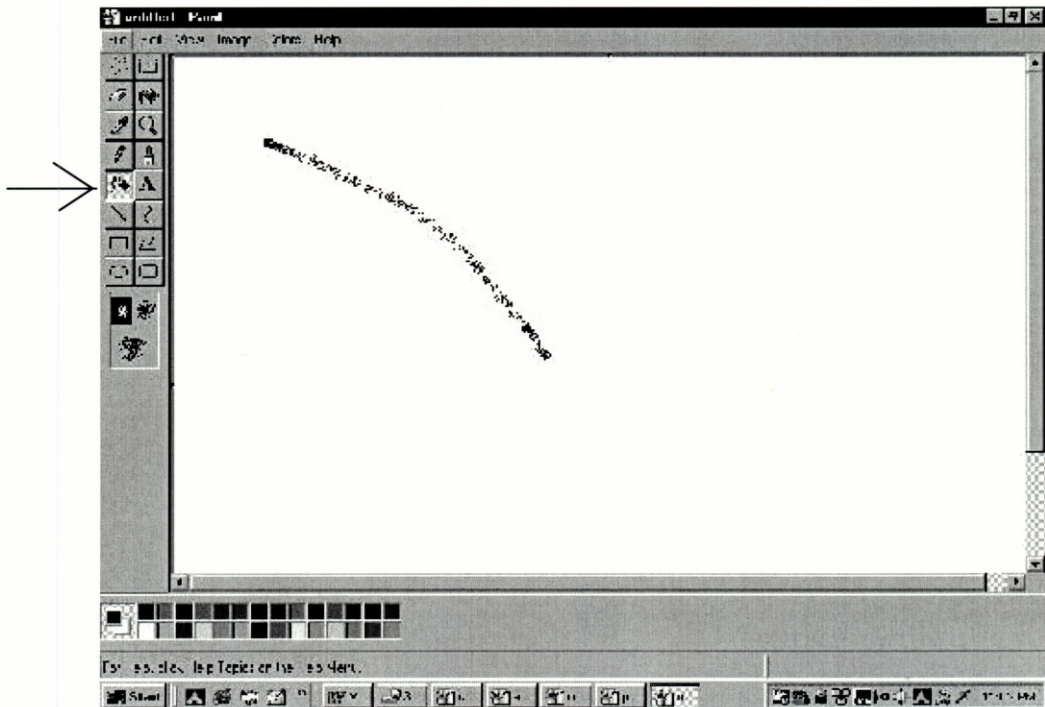


Now, you can draw a line by a technique called
Clicking and Dragging.

To do this, click the left mouse button and hold down while dragging the mouse in the direction you want the line to go.

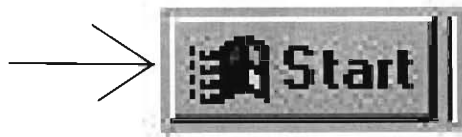


You can make other kinds of lines and shapes with this paint program also. Try experimenting with the different buttons and discover what they do.

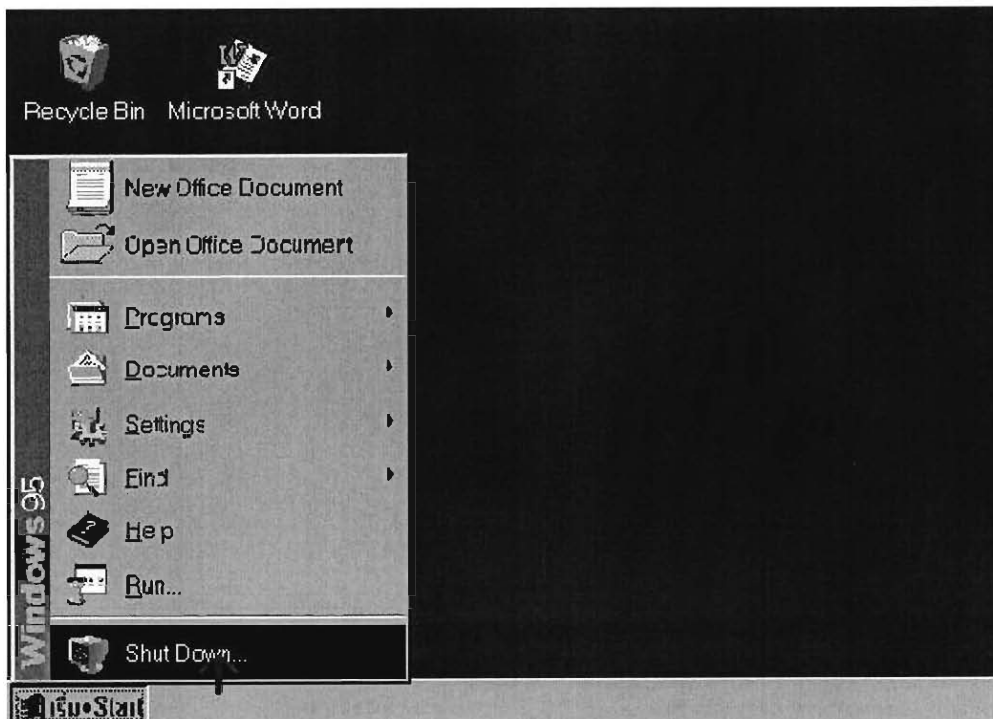


Now, we will take you through the **shut-down** process. It is very important to shut down the computer properly when you are finished with it.

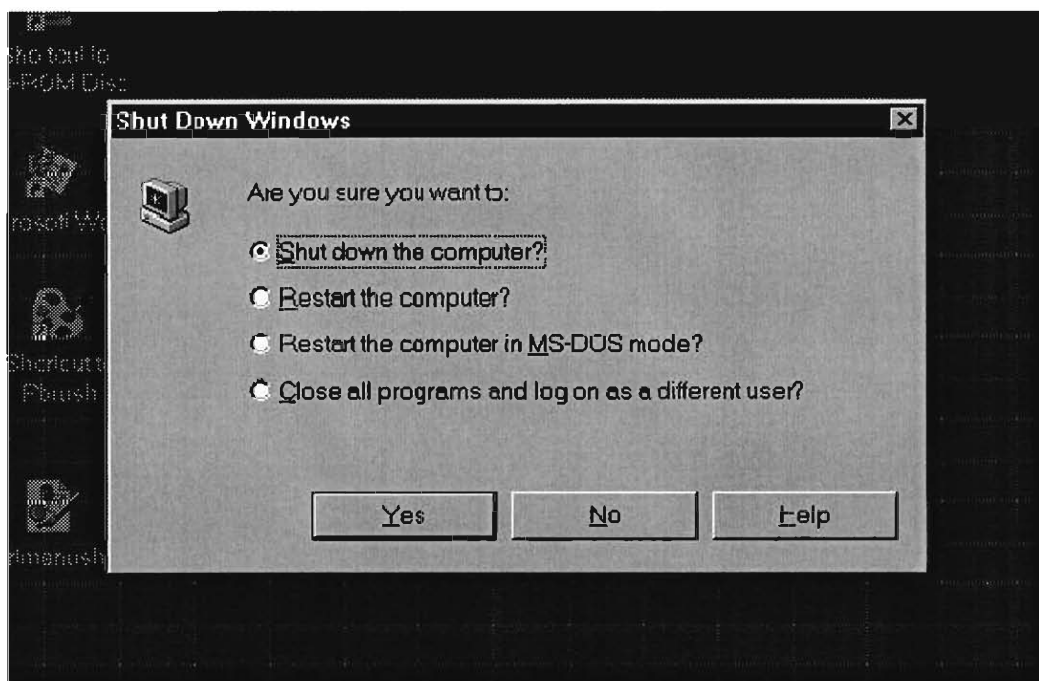
To do this, click on the start button located at the bottom of your screen.



Then, choose **Shut Down**.



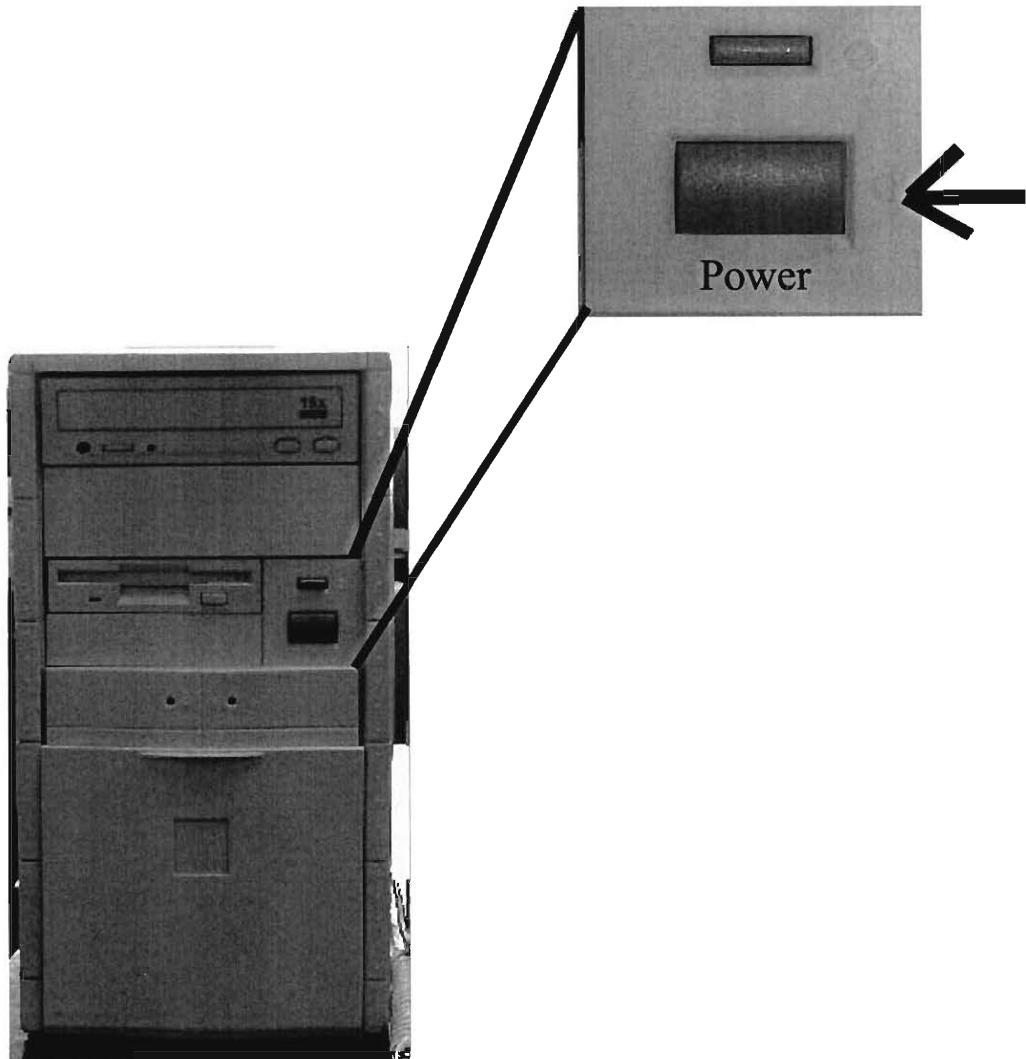
When you see this box, move the pointer to **YES** and press the left mouse button.



When you see this screen it is safe to turn off the computer.



To turn off the computer, once again just press the power button.



Quiz 1

Please label each of the parts of the computer.



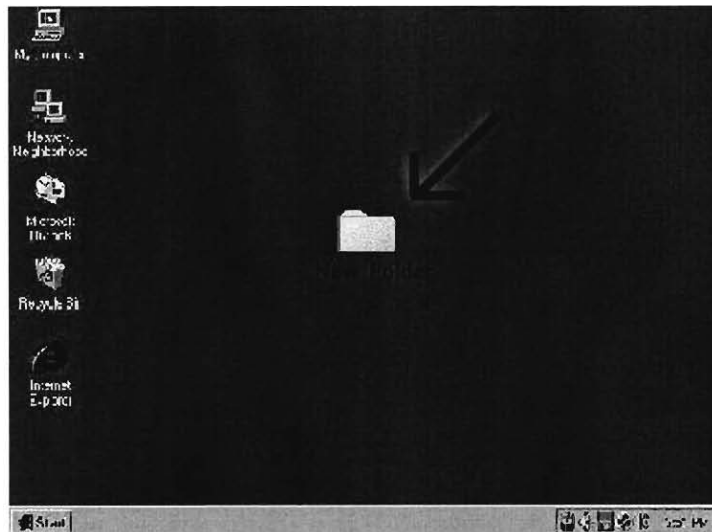
Basic Computer Skills



Lesson 2 For Teachers

Directories

A **Directory** in a computer is similar to a file cabinet. You can place files, like a picture you create in Microsoft Paint, in different directories (folders).



Directory (Folder)

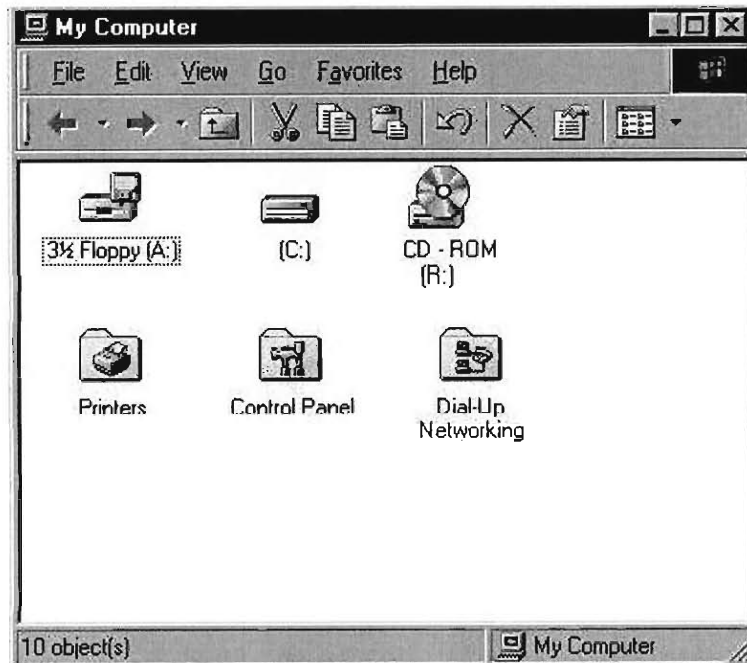
You can save your work to different directories (folders) in the computer.

Now, let's look at the directory structure in your computer.

Find this icon and double-click on it.



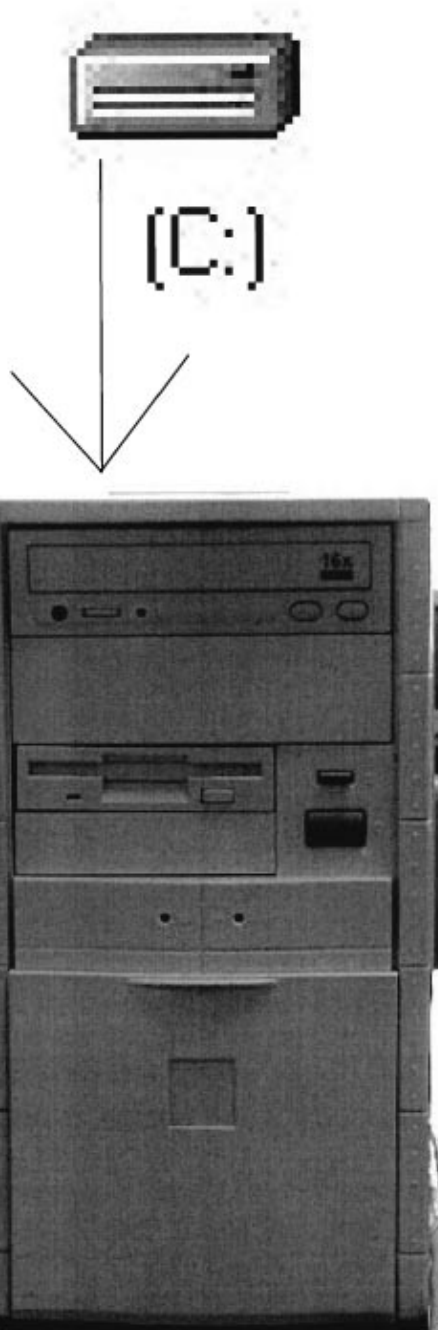
You should see the following screen.



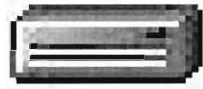
Each icon represents a different main directory or **drive** in your computer. You can save files and directories onto drives.

C Drive (Hard Drive)

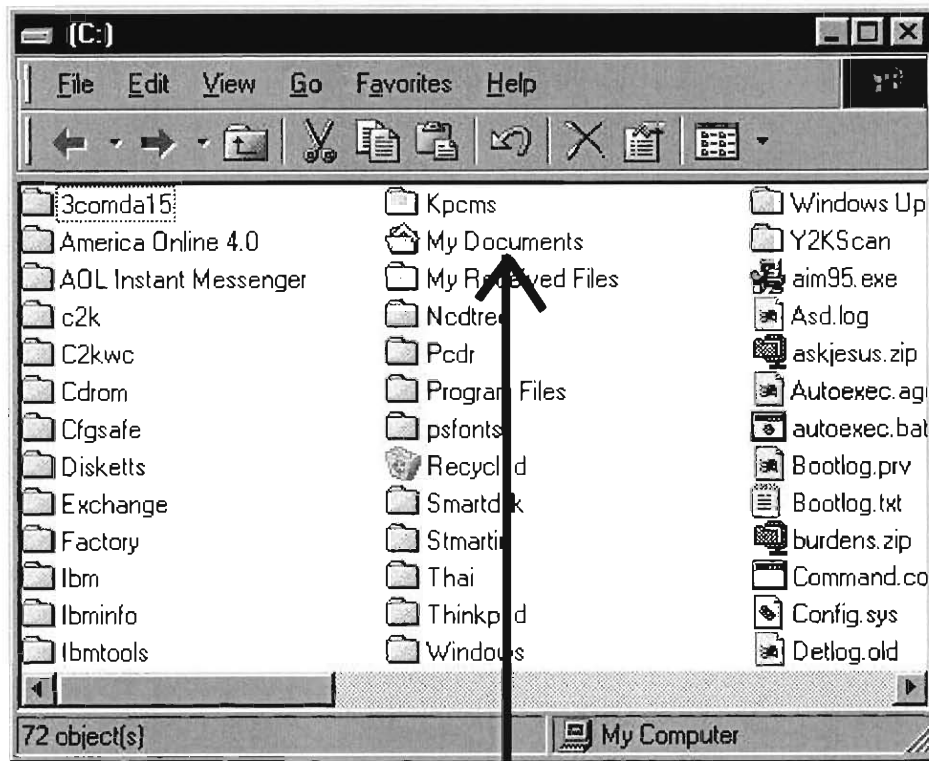
The C Drive is located inside the CPU. If you save your work to the C Drive, your work stays on the computer.



Double Click on the C Drive.



(C:)

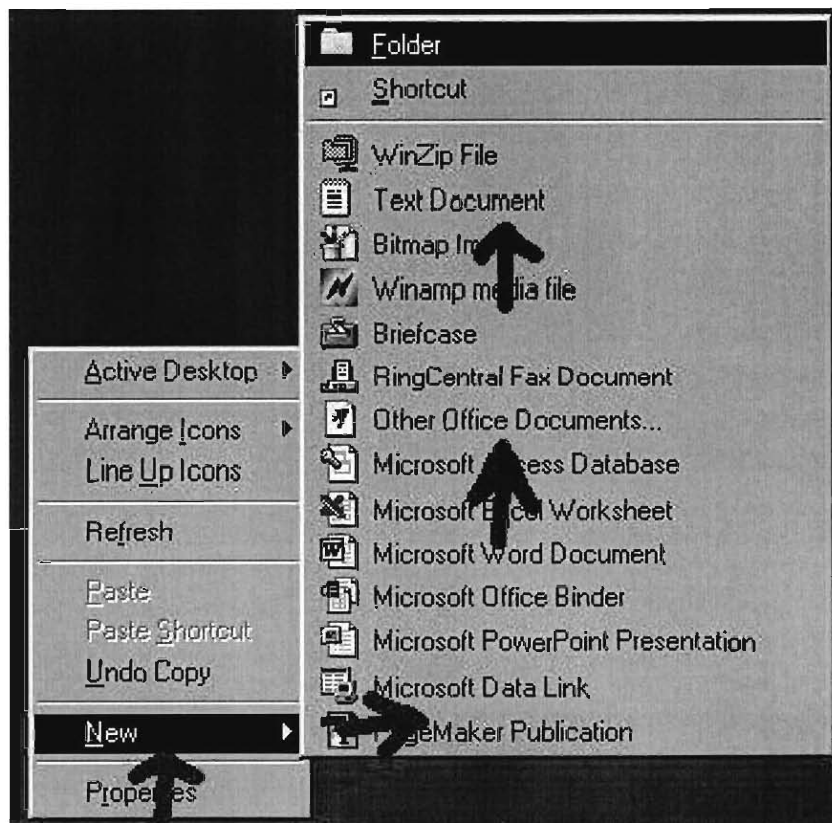
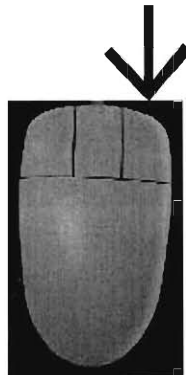


Double Click on **My Documents**

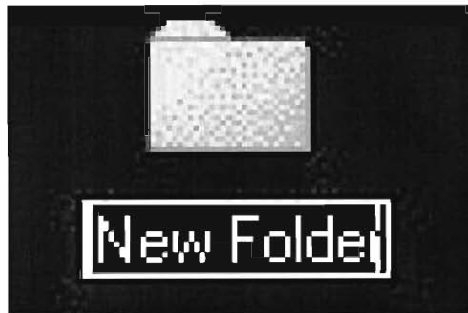
Now, let's create a directory in "My Documents" to keep your files in.

How to create a directory (folder)

Right Click the mouse.



Now, you need to name the folder you just created. Type the name.

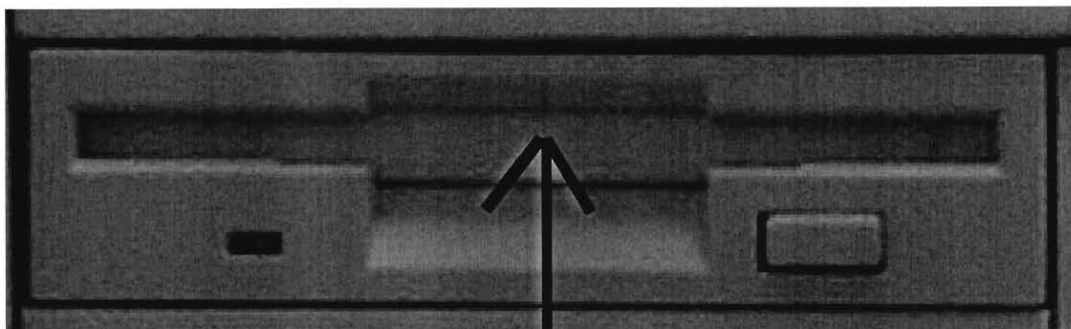


Now, you can place your files into the folder. This is a good way to organize your work.

A Drive (Floppy Drive)



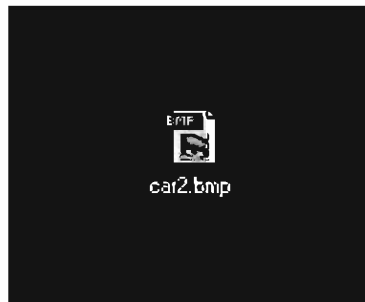
3½ Floppy (A:)



The floppy drive is also located inside the CPU. If you save to the floppy drive, you can take¹⁰⁰ the floppy disk with you.

File Extensions

In each program that you use, you may create different files. For example, in Microsoft Paint you created a file that looked like this:

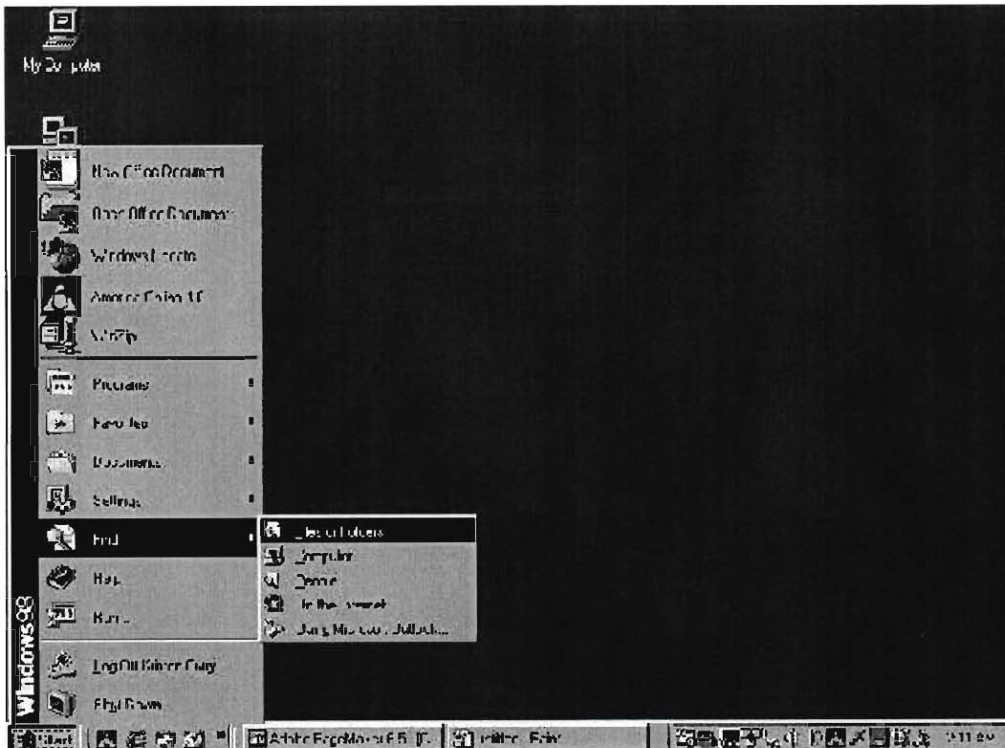


The name of the file is Car. The **.bmp** is called a **file extension**.

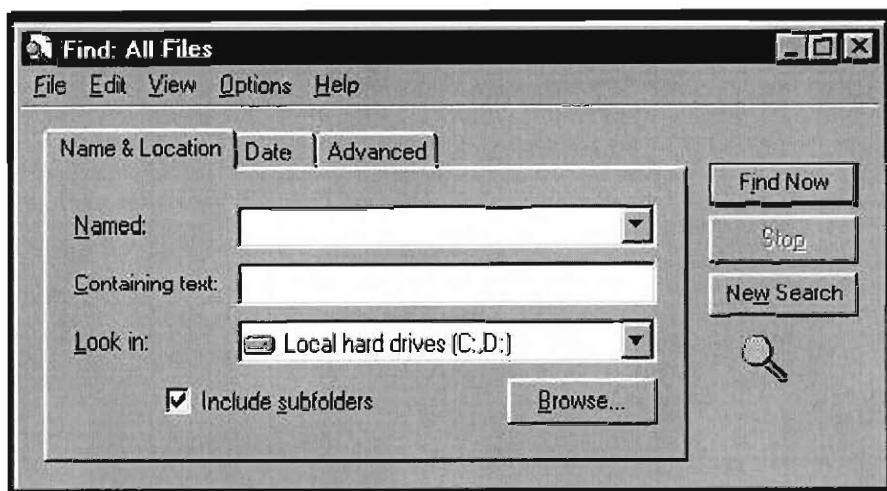
The file extension classifies what the file type is.

How to Find a File

If you are not sure where a file is located, you can use the file name and/or file extensions to **Find** a file.



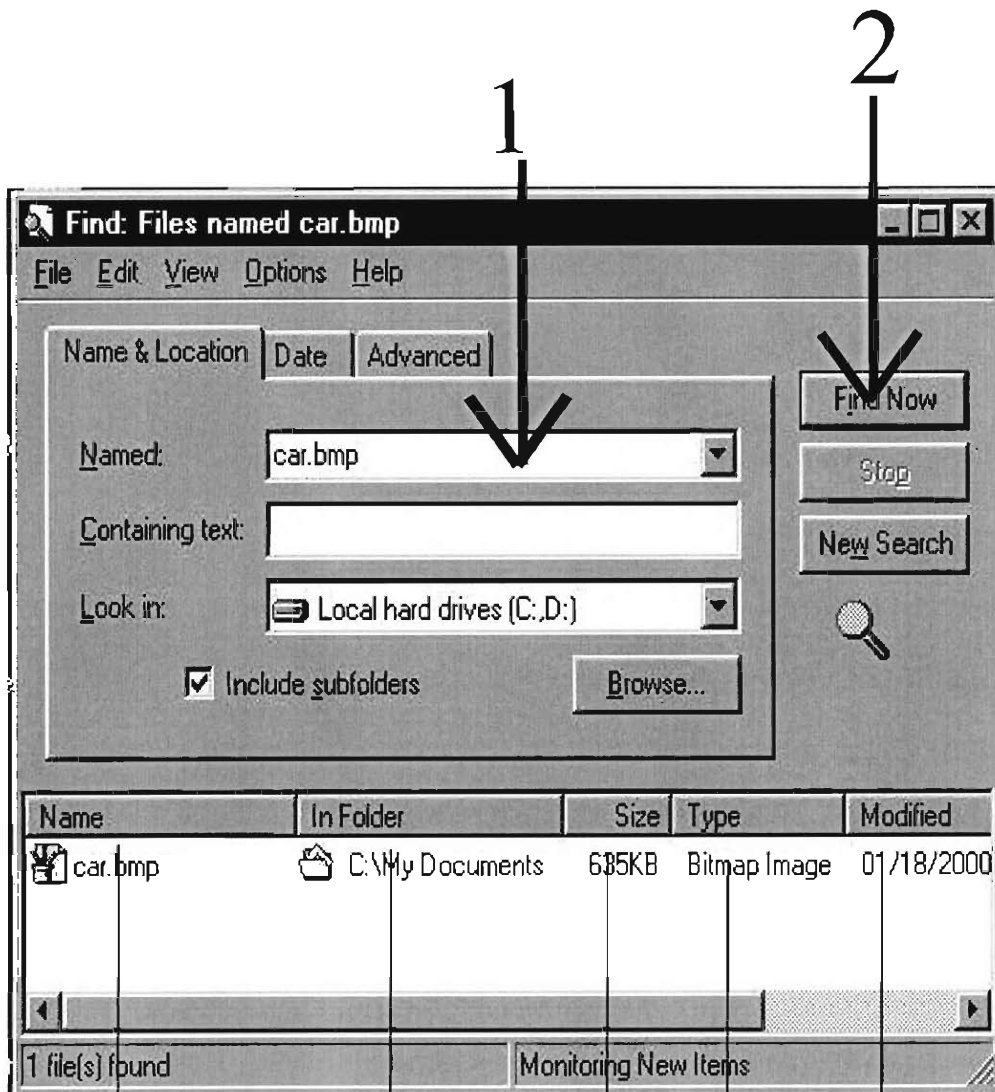
After you click on Start, Find, then Files or Folders, you should see the following box.



To find the file “car.bmp”, type the name of the file (car.bmp) in the box labeled **Named**.

Then, Click **Find Now**.

What appears below, is a list of files that the computer found, which matches what you typed in the box.



Name of file

Directory
Location

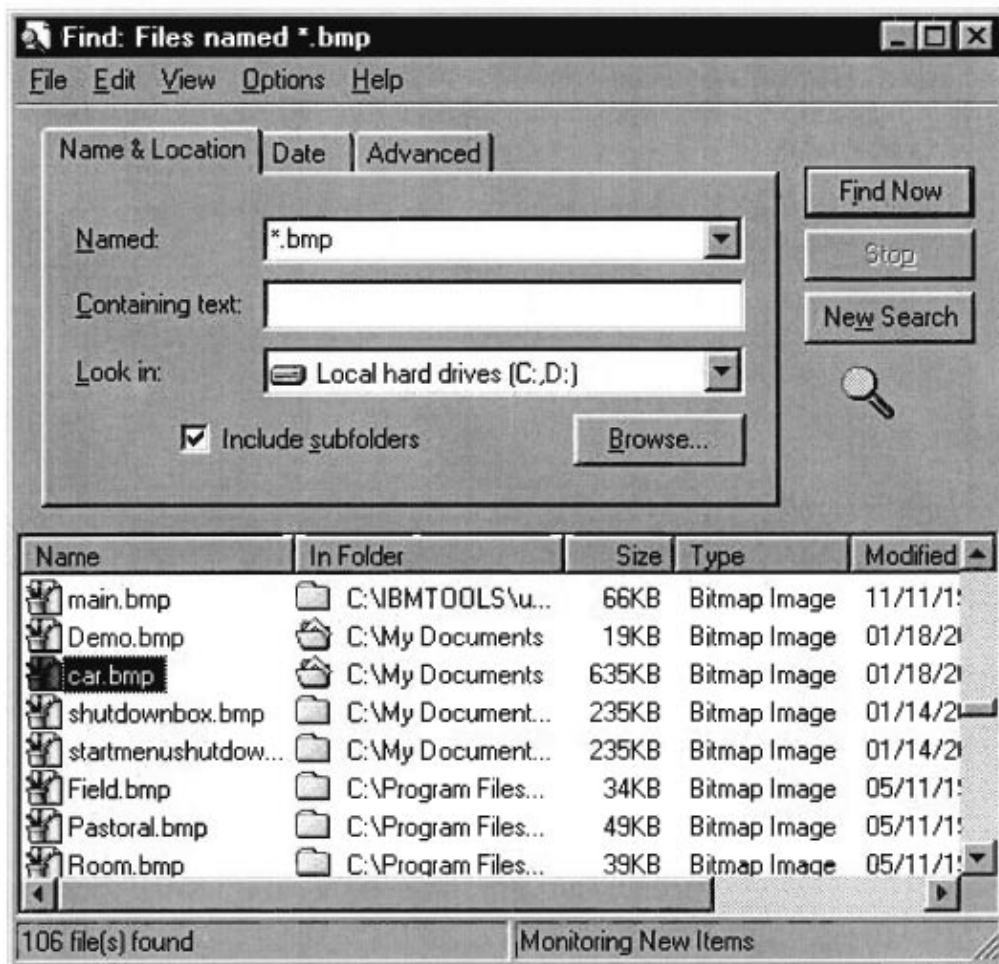
Size
of File

File
Type

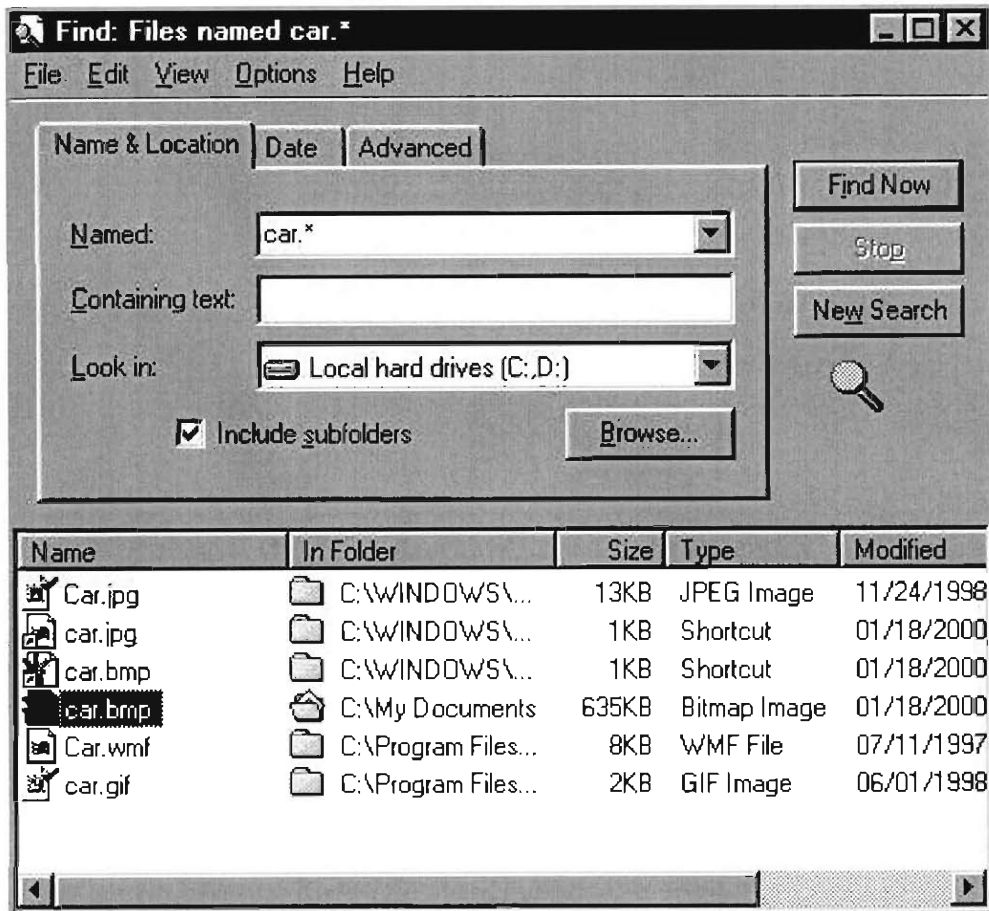
Date
Modified

If you are not sure of a file name, you can use the * and the file extension to find your file.

Using the *, you can find every file that ends with .bmp. Then, you can look through the list to find the file you're looking for.



You can also find a file if you only know the name and not the extension. You can again do this using the *.



Microsoft Word

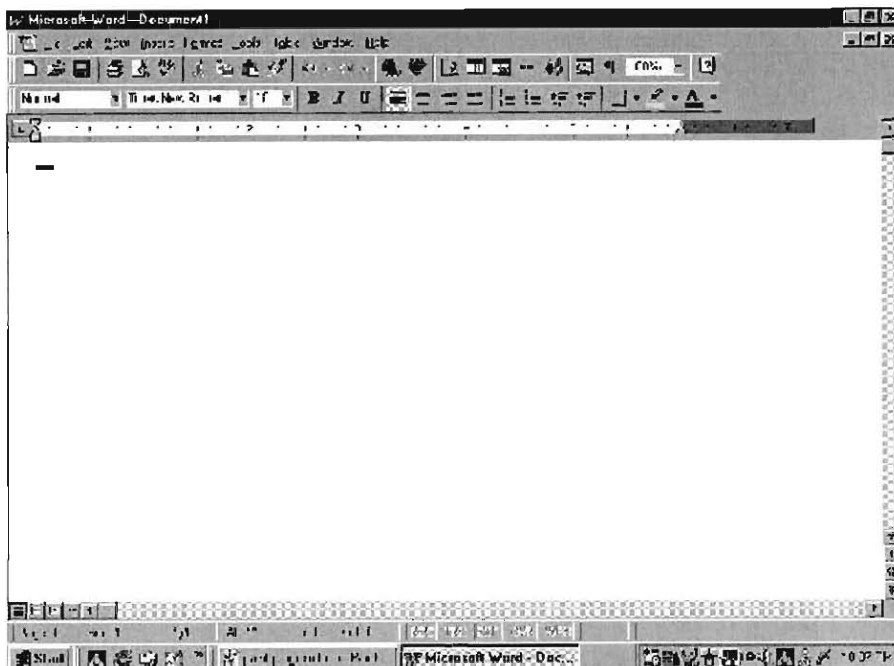
In the previous lesson, we learned about Microsoft Paint. Now, are going to learn about another program, Microsoft Word. This is a “word processing” program that can be used to write letters and other documents.



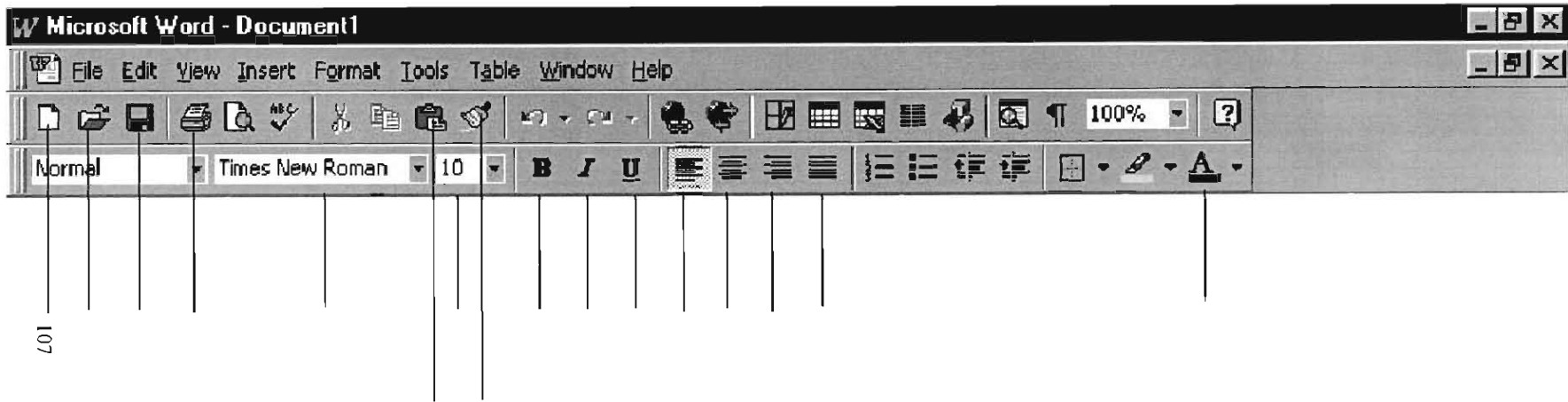
Find this icon and double-click on it.

This will start the Microsoft Word Program. Your screen should now look like this.

Try typing some words onto the screen.



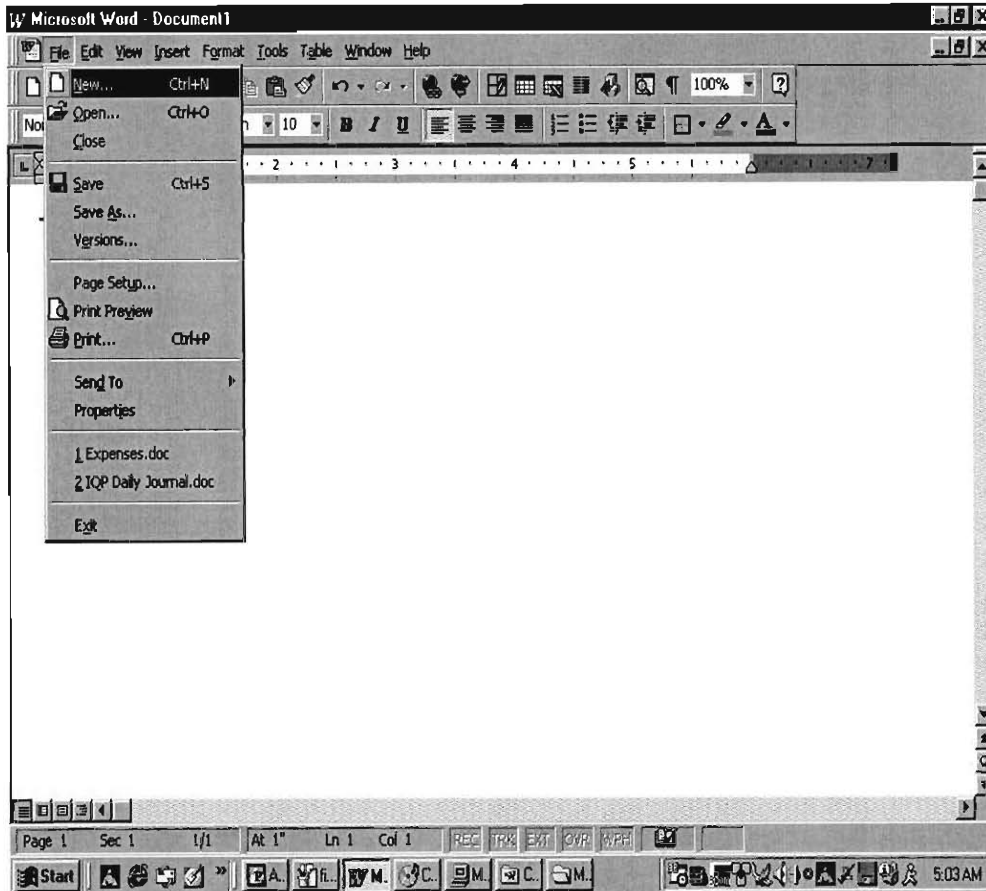
Microsoft Word Toolbar



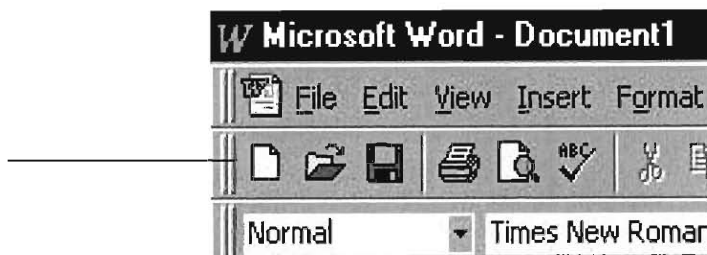
Microsoft Word has a toolbar at the top of the screen with many buttons. Each button performs a different function.

Opening a New Word Document

There are two ways to open a new Word document. The first way is to click on the File menu and choose New.

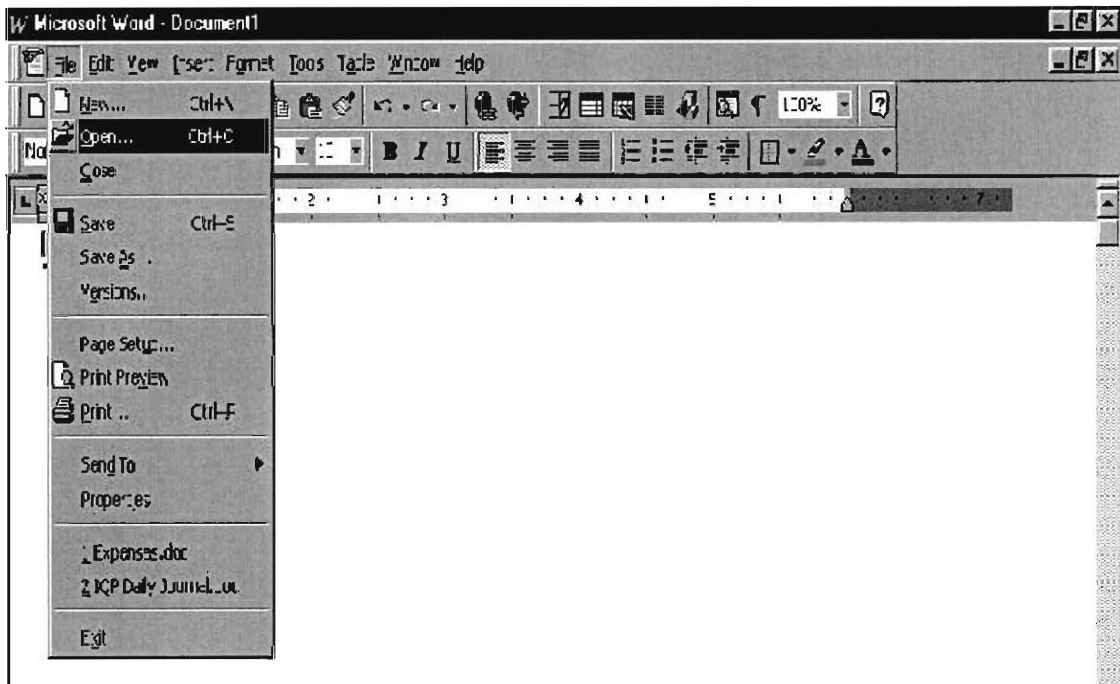


The second way is to click on the “new document” button on the toolbar.



Opening an Existing Document

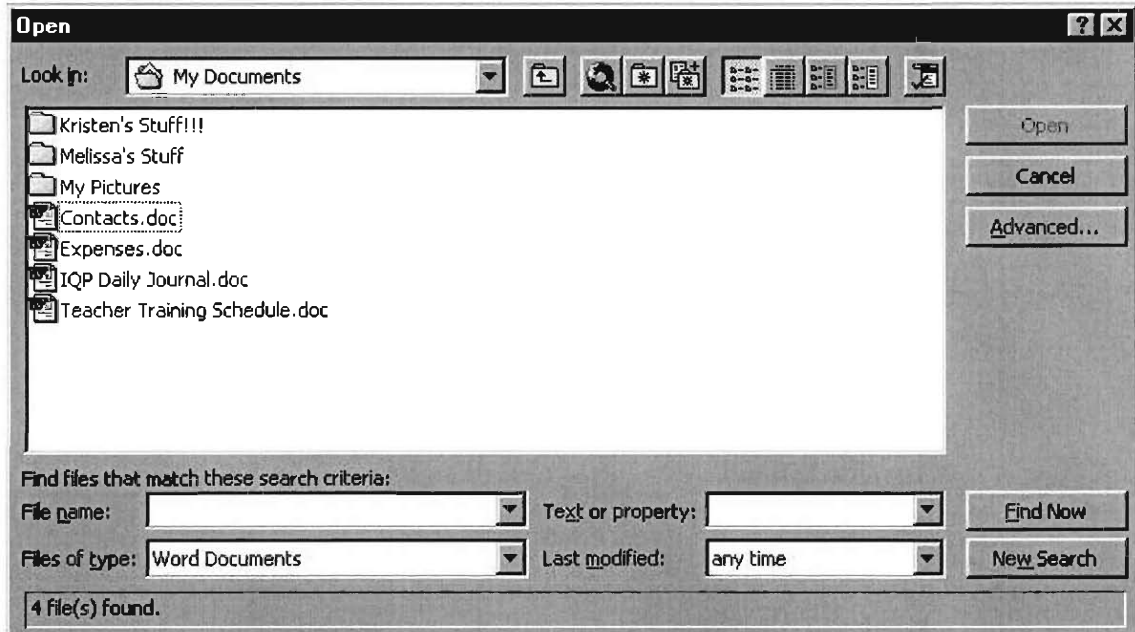
There are also two ways to open up a document in Word that you have already created. The first way is to choose File, then Open.



The second way is to again press the button on the toolbar.

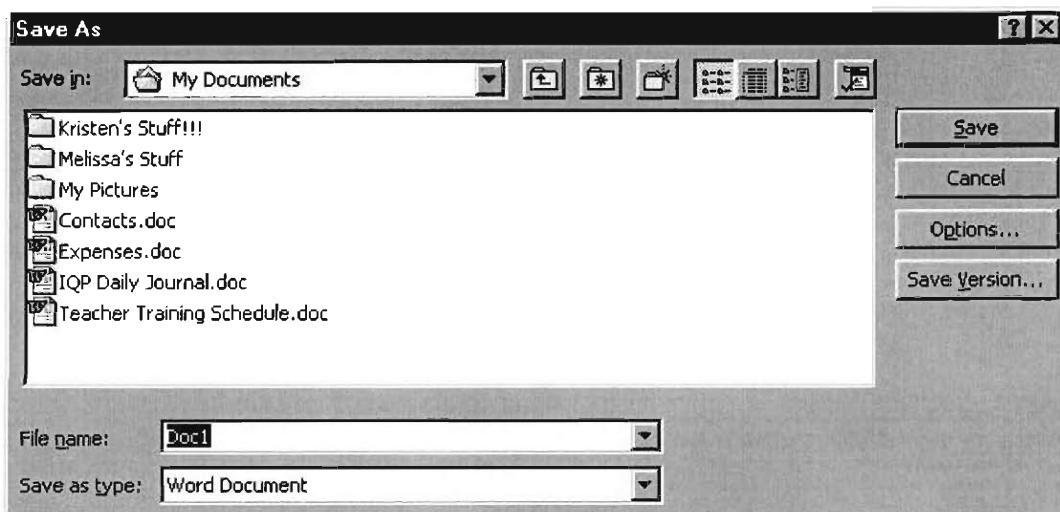
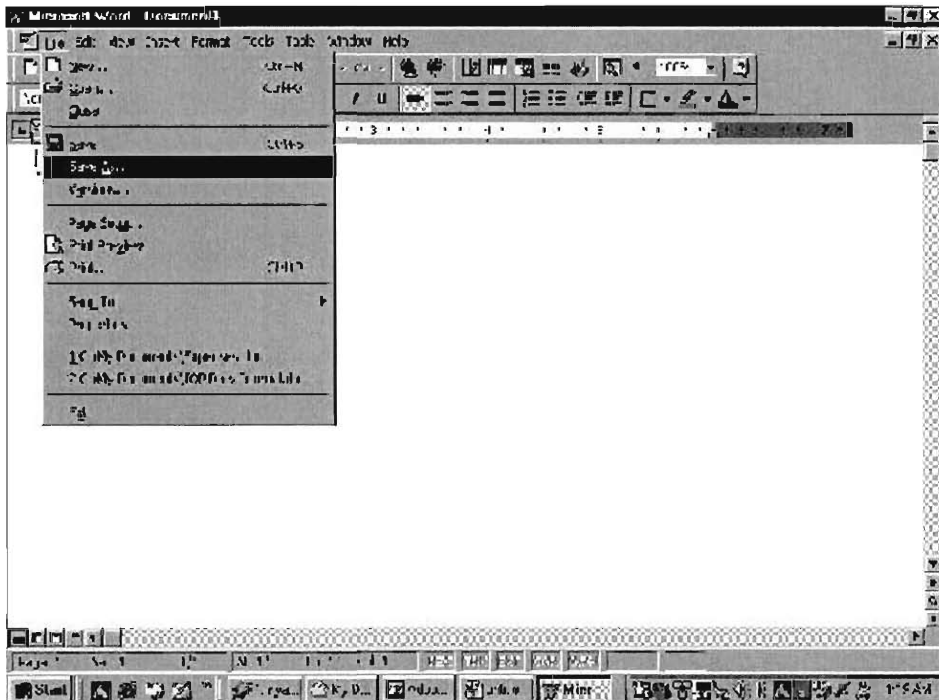


You should see this screen next. Here, you can choose the document you wish to open. Just click on the document and then click open.

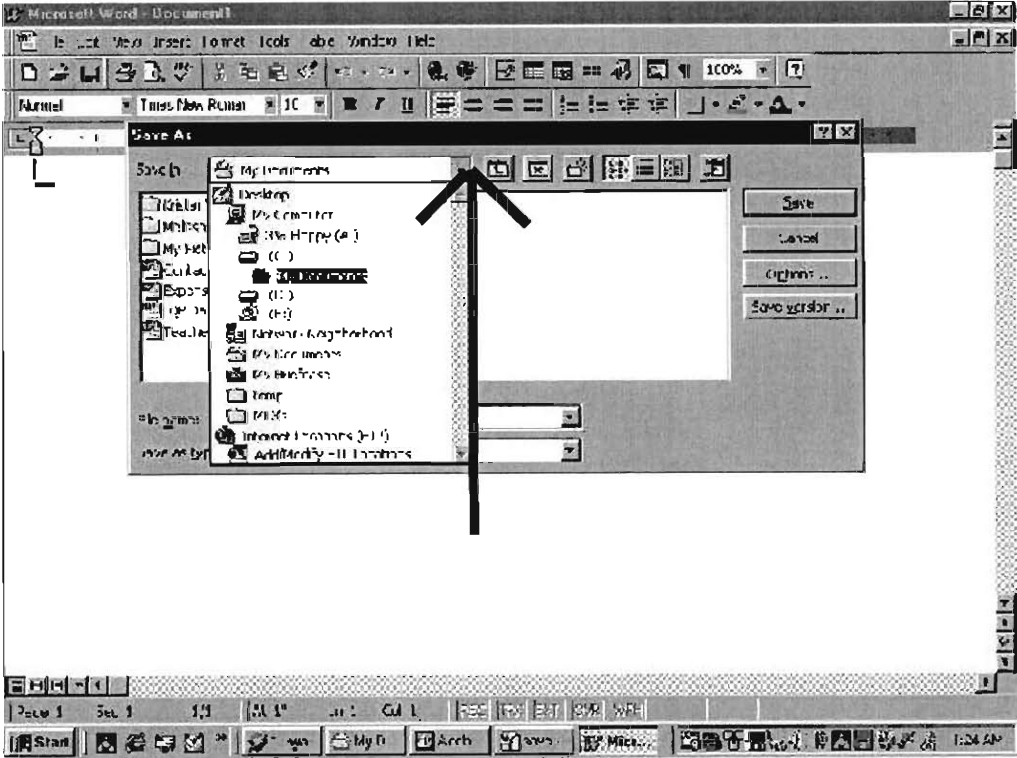


Saving a Document

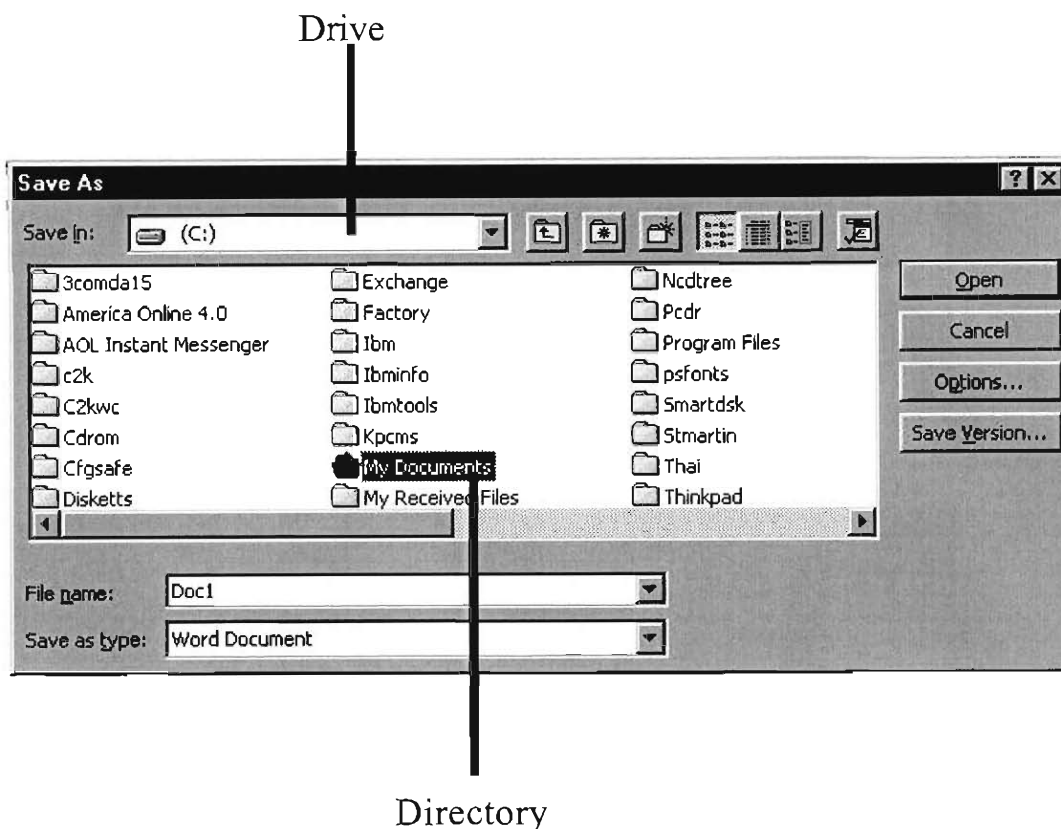
The first time you save a document, you should pick **Save As**. This allows you to name your document and choose the directory you wish to put it in.



Here, you can choose which directory to save the file to. You can save to the C Drive or A Drive.



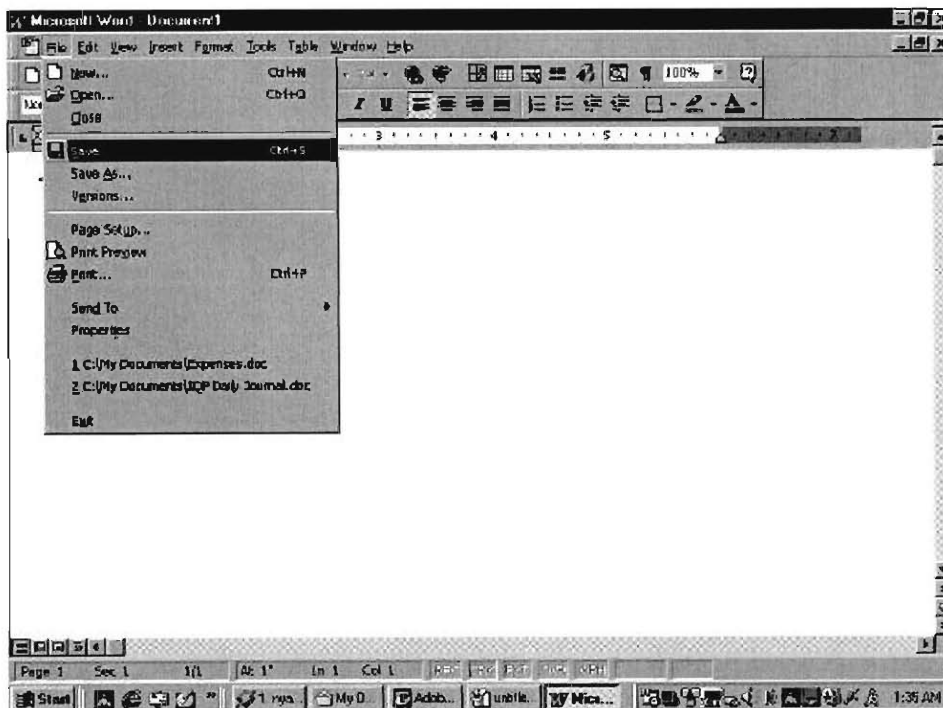
After you have picked the drive, you can pick a directory within the drive. For example, you could save to C drive and then to the “My Documents” directory.



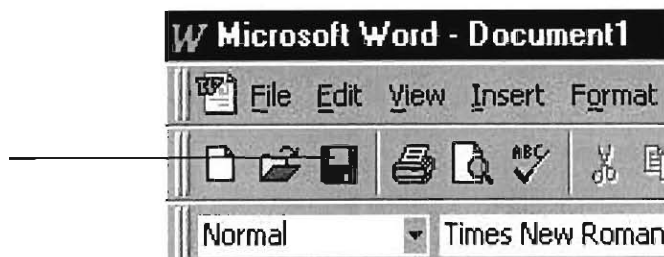
After you have named the document and you only want to save recent changes, you can use the regular **Save** command.

There are two ways to do this.

One way is through the File Menu.



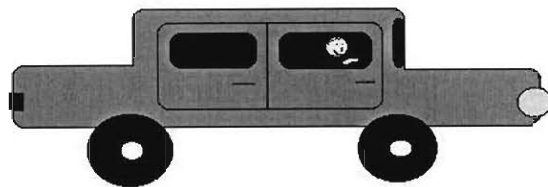
The other way is to press the button on the toolbar.



Inserting Pictures

In Microsoft Word, you can insert pictures into your documents. This will be good for preparing documents for the children.

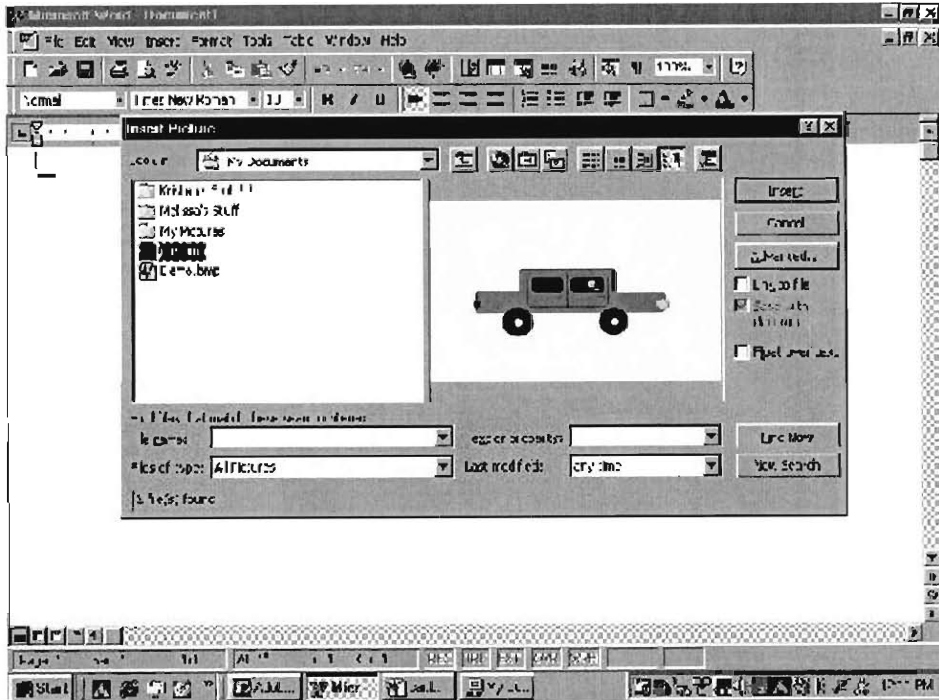
For example, if you want to insert a picture created in Microsoft Paint, such as this car:



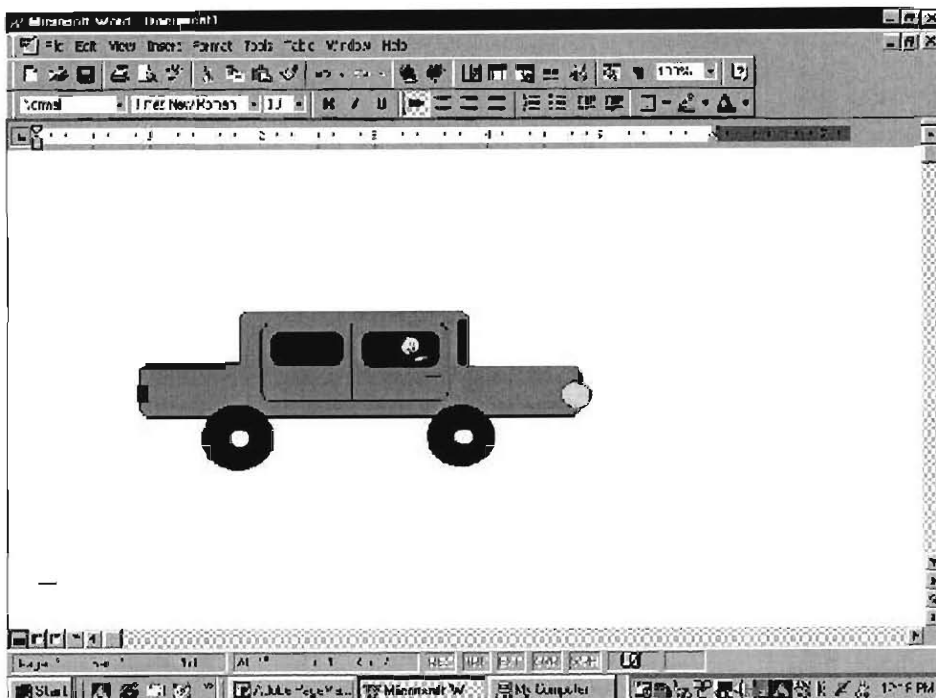
Choose Insert, Picture, From File to insert a picture.



At this screen, once you have found the directory where your picture is stored, click on the file and press **Insert**.



This is the result after inserting the picture of the car.



Quiz 2

Please search for the document, **Assessment.doc**, using the find command. Then, open up the document and follow these directions.

1 - Write a sentence and turn it into bold and underlined text.

2 - Write another sentence and make the text bigger.

3 - Write a third sentence and change the color of the text.

4 - Import the picture of your choice into the document.

5 - Save this new document to your floppy disk using Save As and rename it using your name.

Basic Computer Skills



Lesson 3 For Teachers

More Microsoft Word

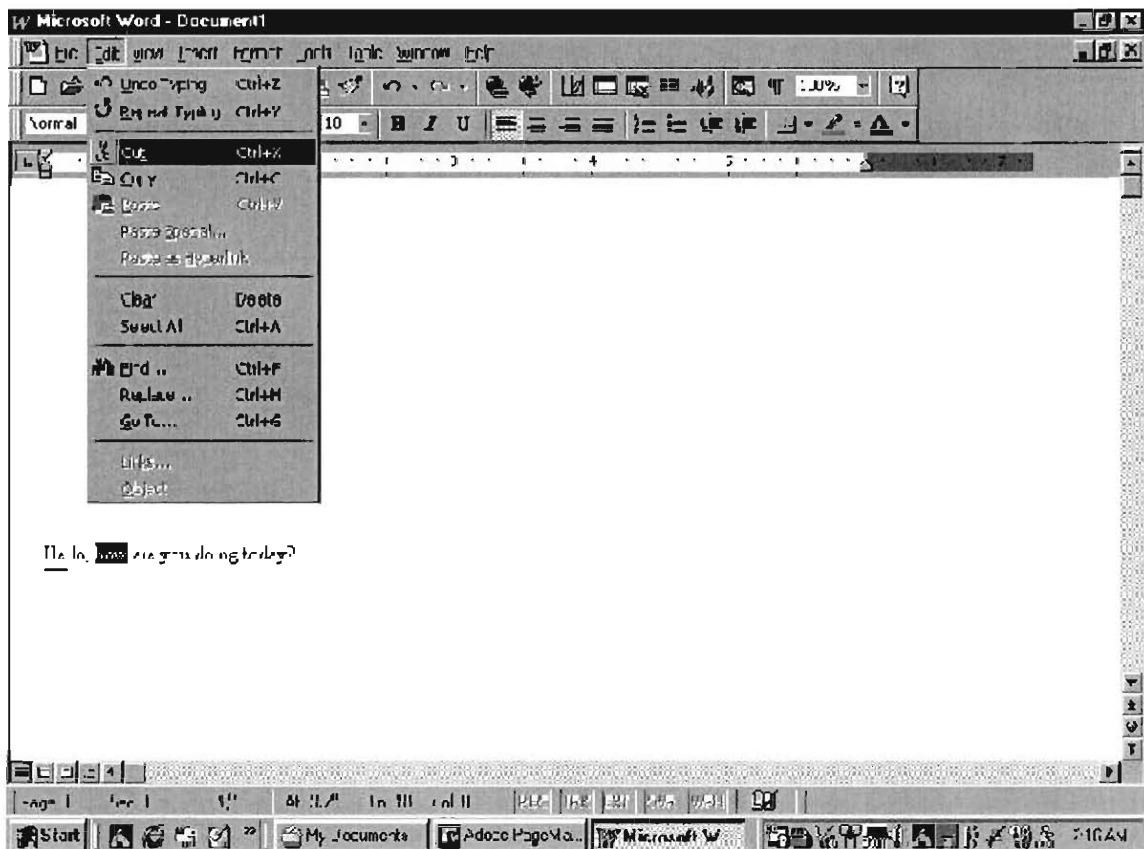
Inserting Clip Art

In addition to inserting pictures you have created, you can also insert pictures that are already part of Word. This is called **inserting clip art**.

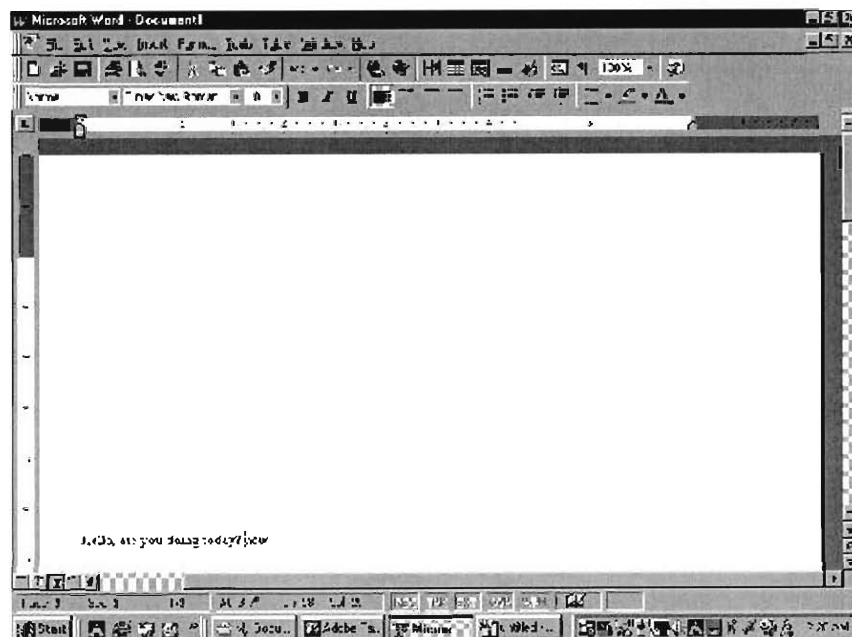
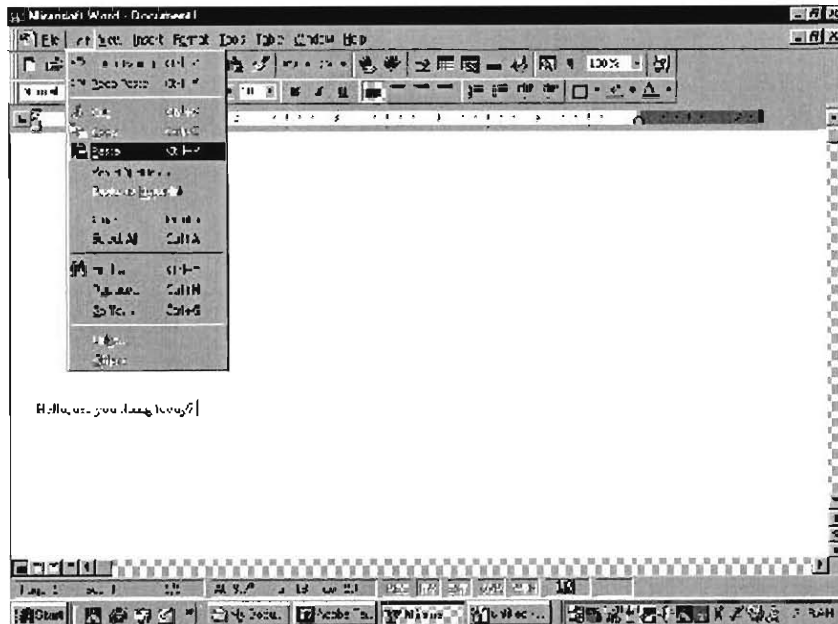


Cut, Copy & Paste

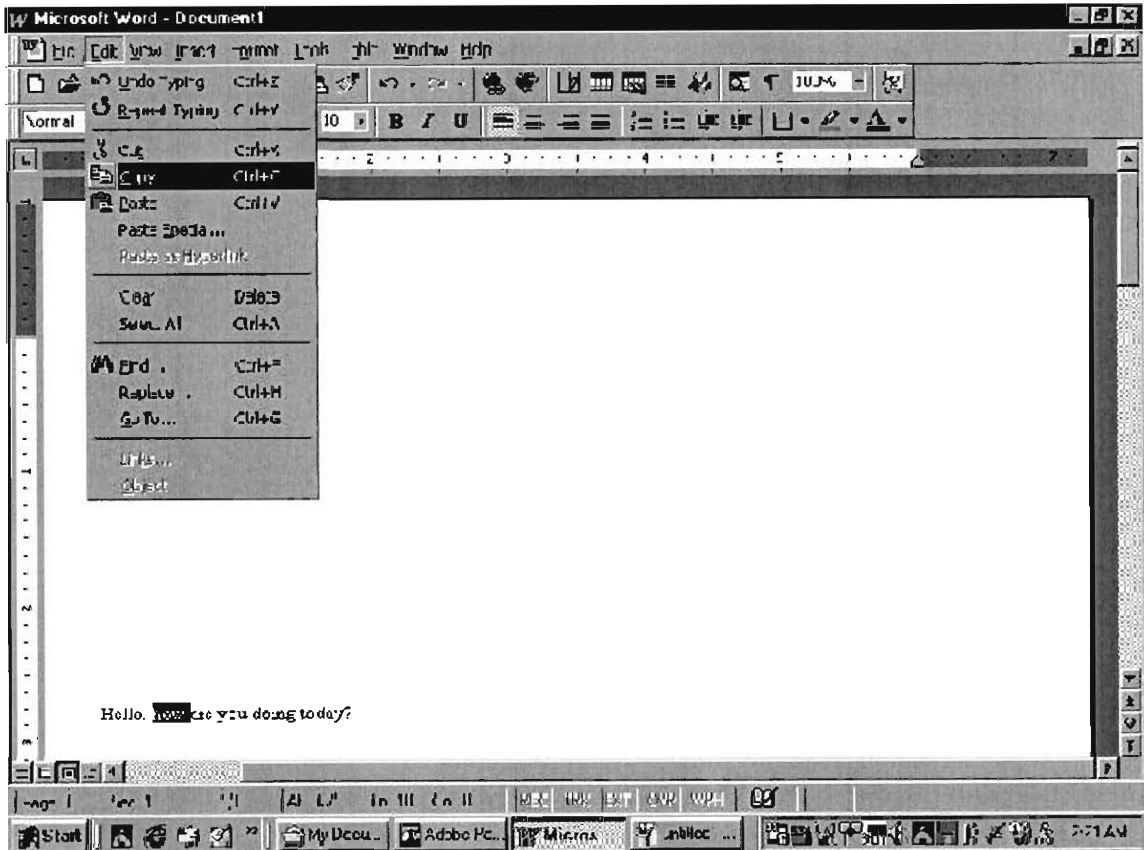
To make word processing quicker, you can cut, copy and paste your work. Cutting deletes your word or picture, copying makes a copy and pasting puts your words or pictures somewhere else.



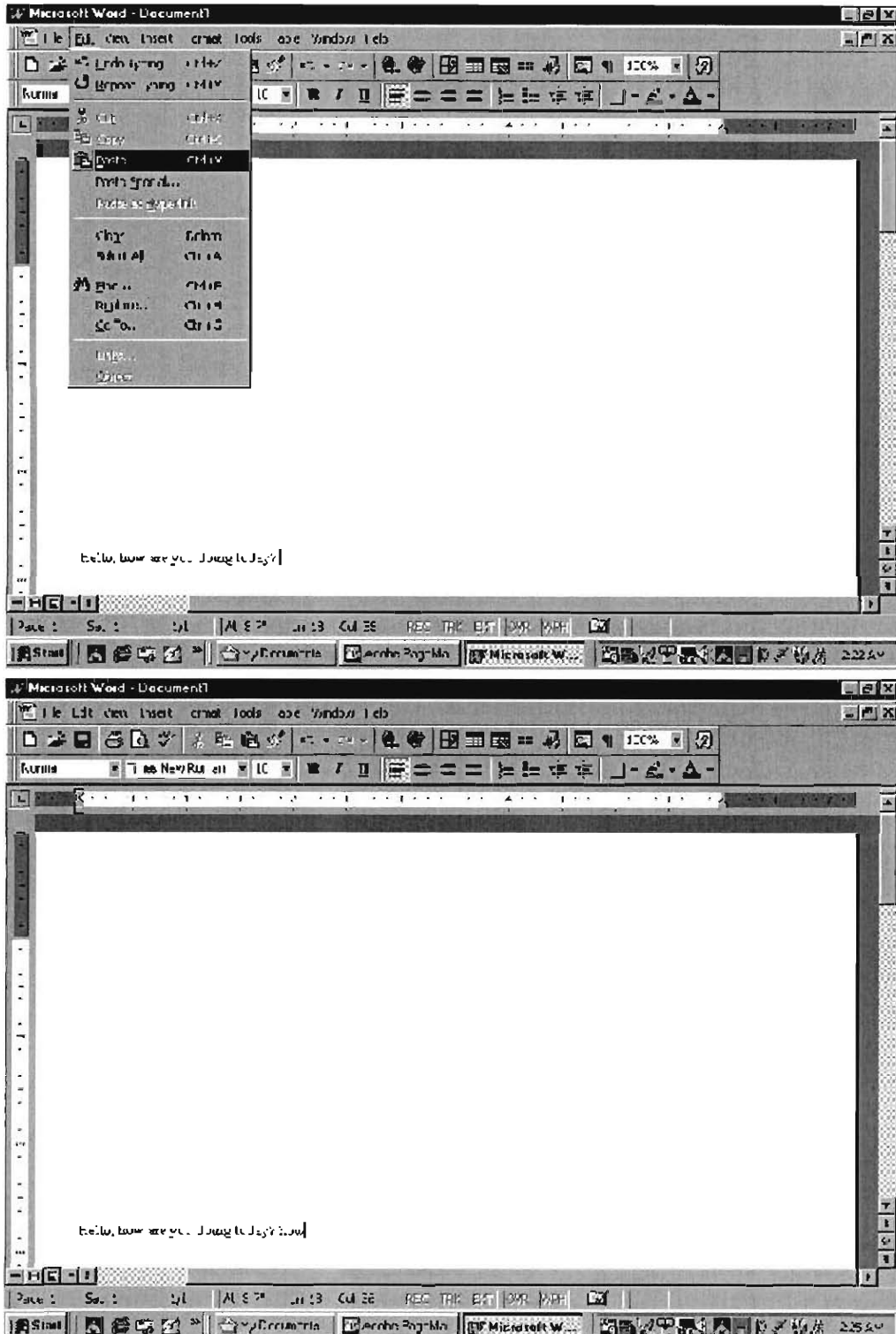
If you **Cut and Paste**, you delete the original word and put it somewhere else.



If you **Copy and Paste**, you leave the original words there and copy them to a new place.

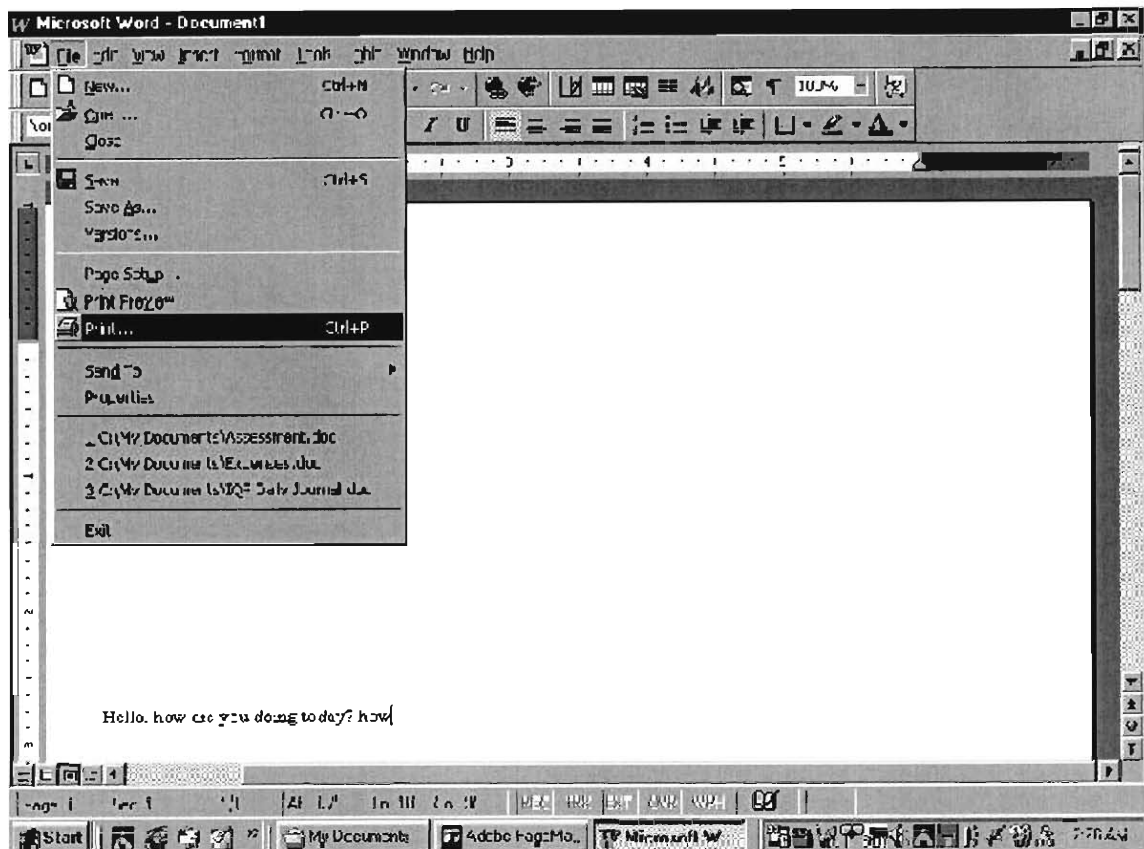


You can put the pointer where you want to place your work.

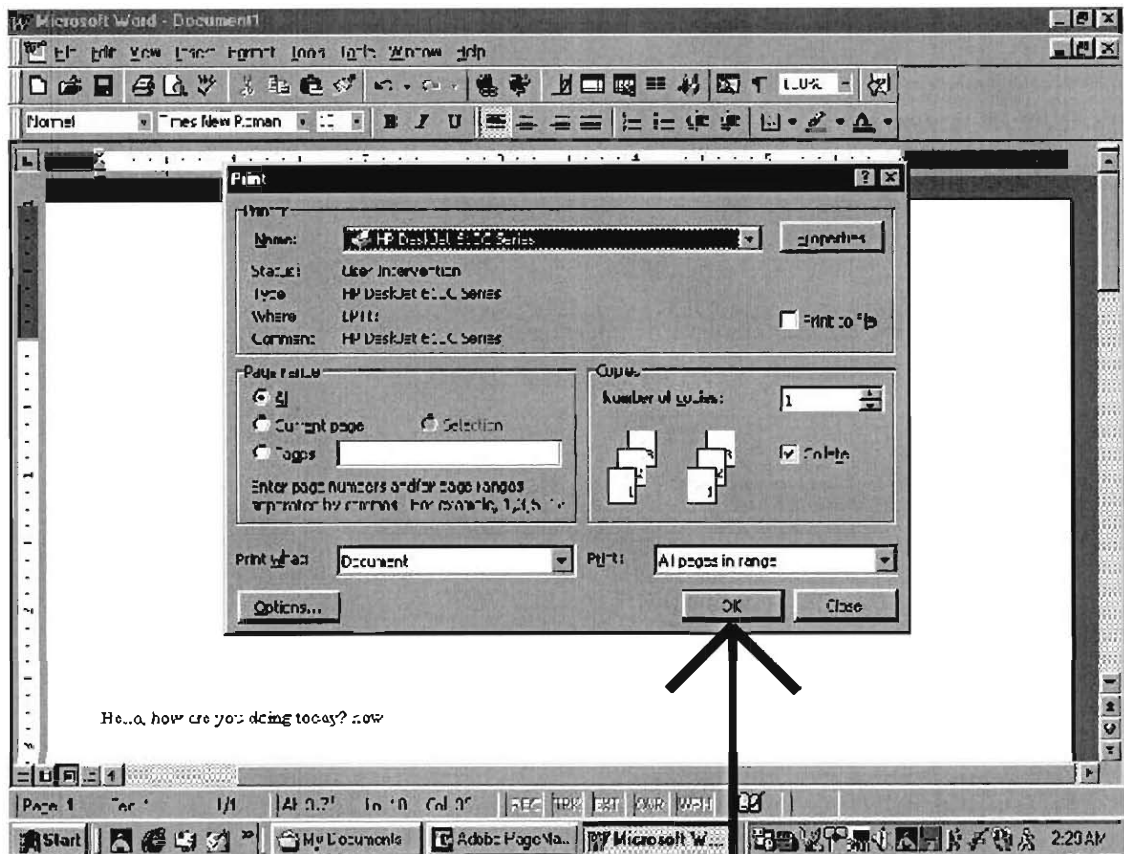


Printing

To print in Microsoft Word, go to the **File menu** and click on **Print**.
This sends your work to the printer.

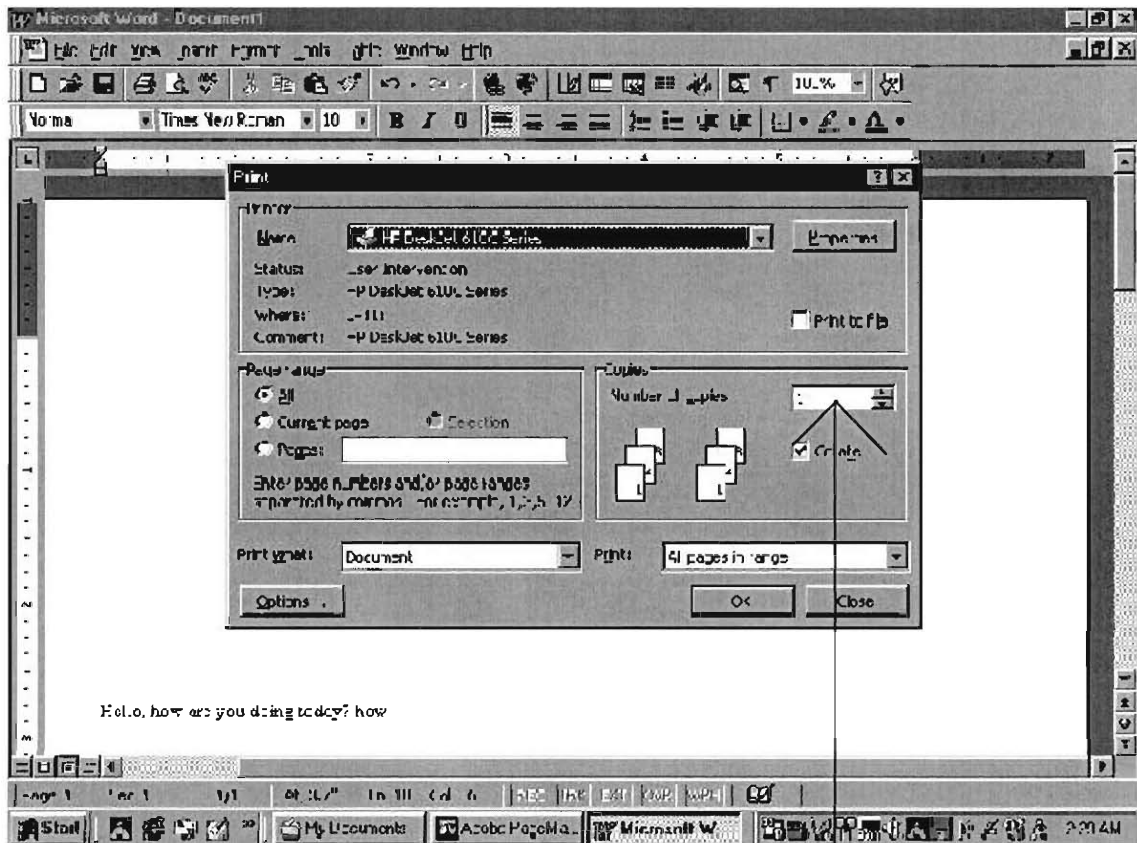


When you see this box, click on OK.
Your work should then begin printing.



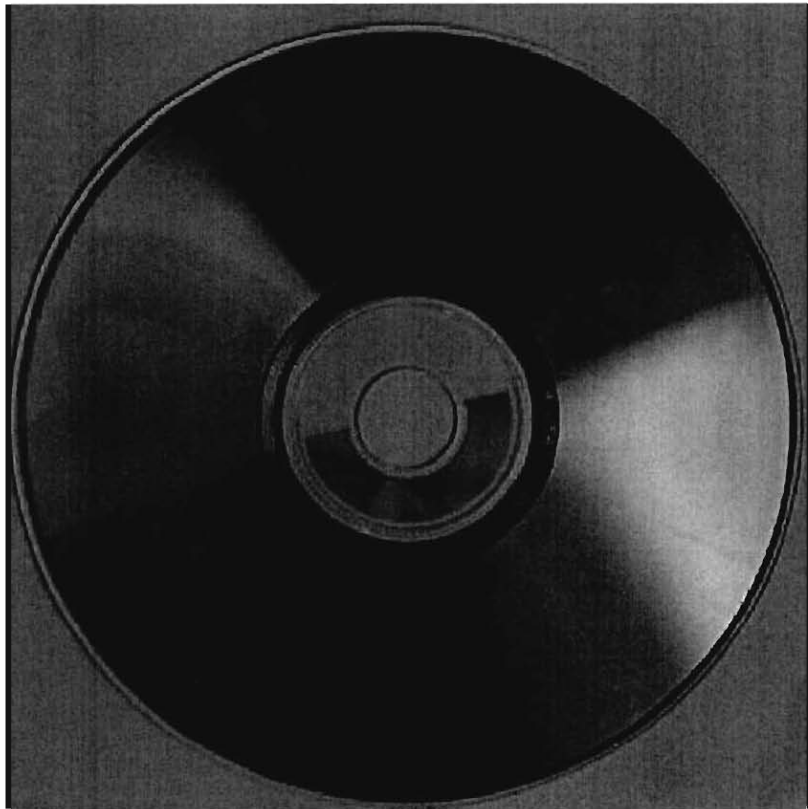
Printing Multiple Copies

If you want to print more than one copy of your work, you can enter the number of copies here:



CD - ROM

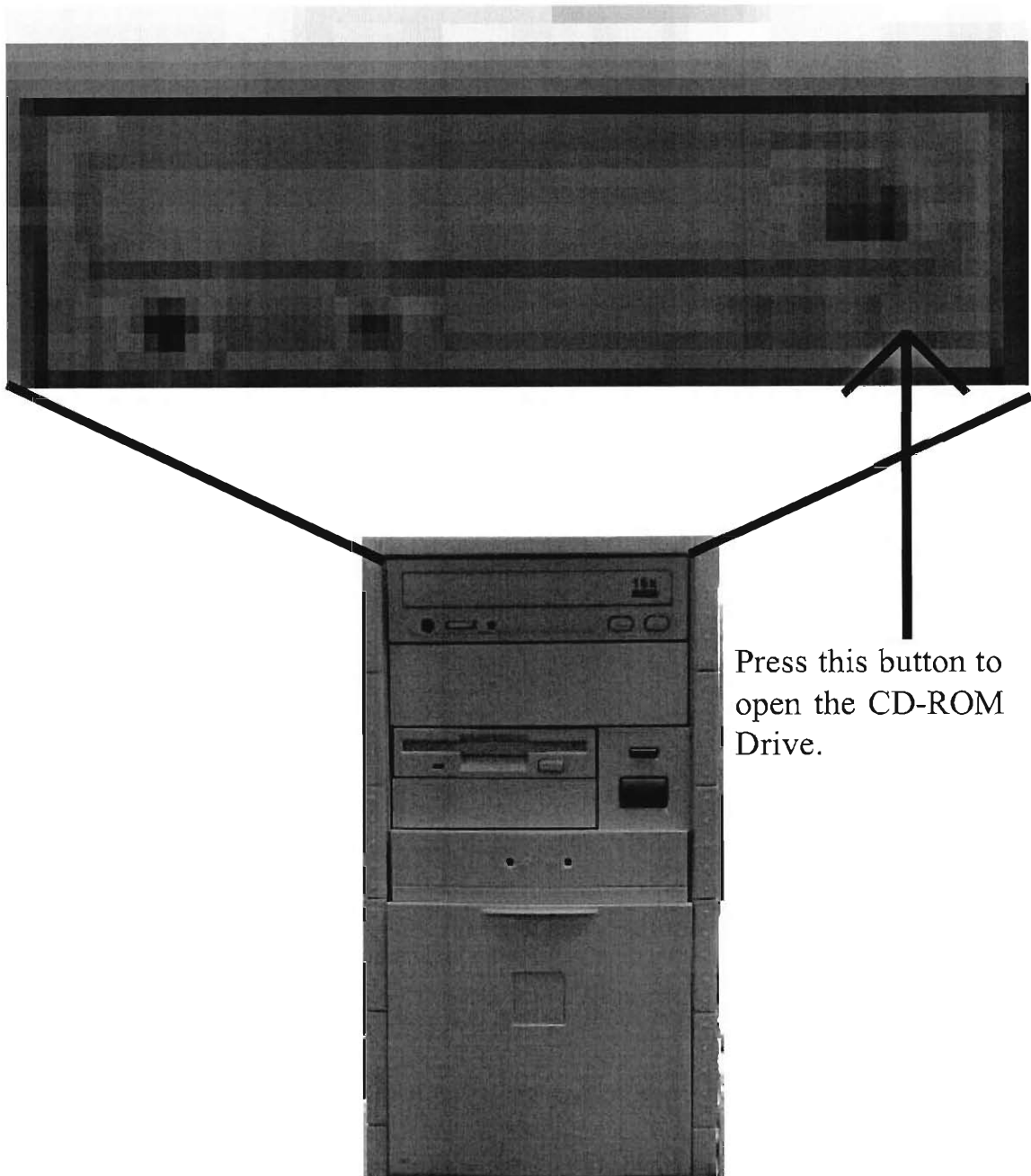
Compact Disc - Read Only Memory



A CD - ROM holds programs for you to use. You CANNOT save to a CD - ROM (unless you buy a special piece of equipment).

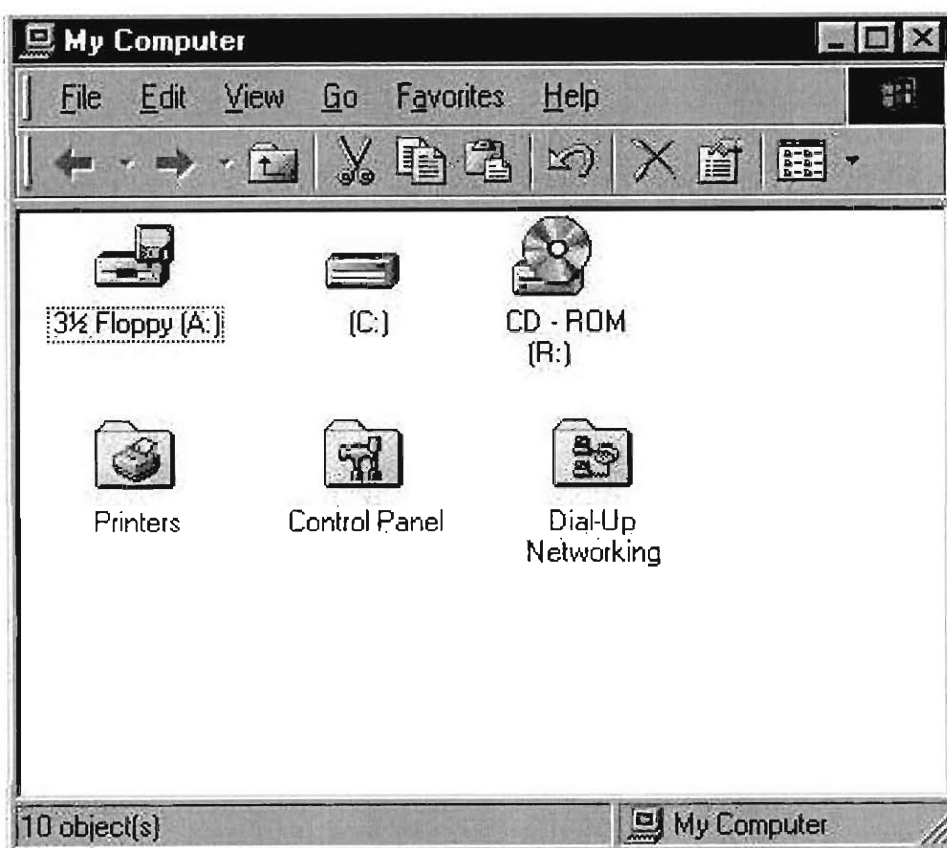
CD - ROM Drive

This is where you insert your CD - ROM.



Press this button to
open the CD-ROM
Drive.

In My Computer, the R Drive represents the CD - ROM Drive.



Basic Computer Skills



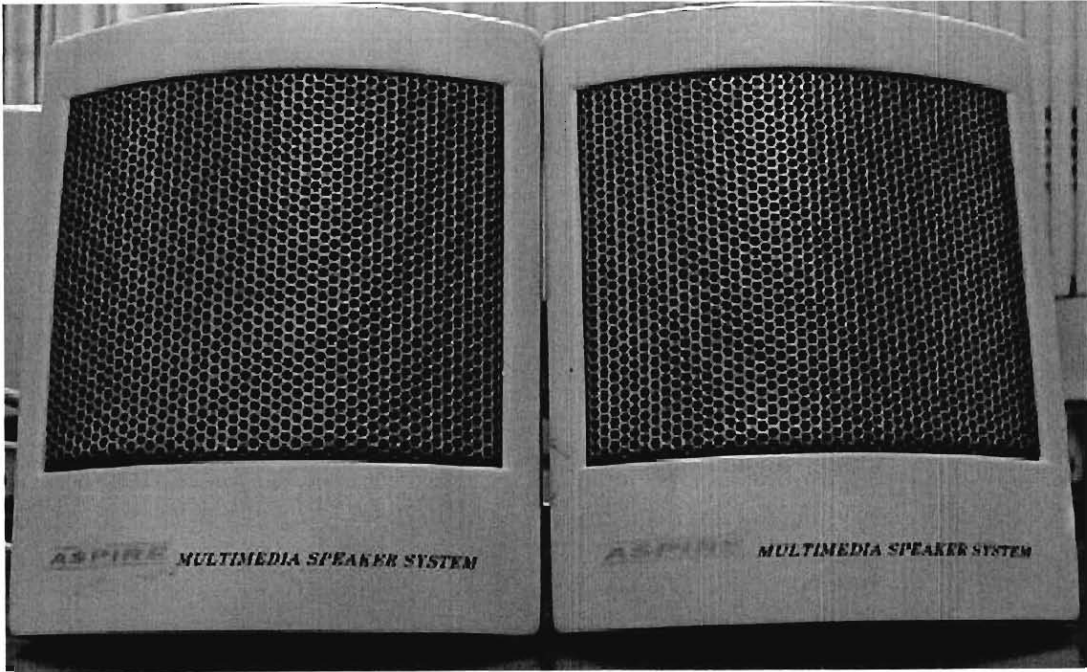
Lesson 1 For Students



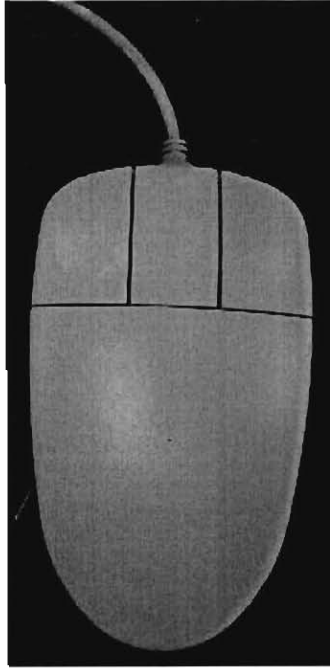
CPU



Monitor



Speakers



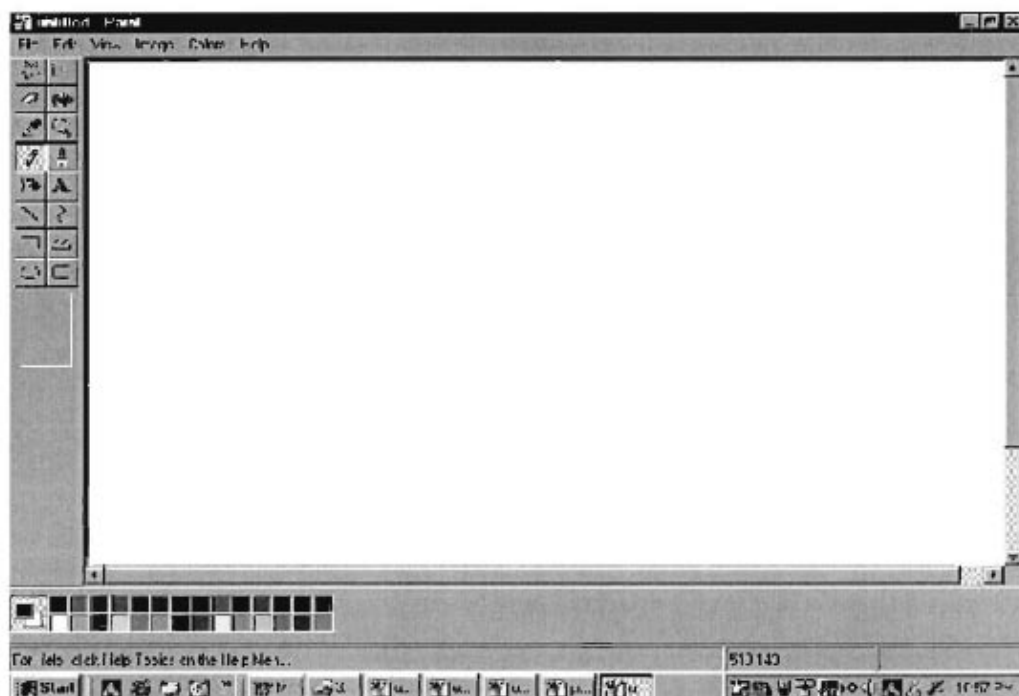
Mouse

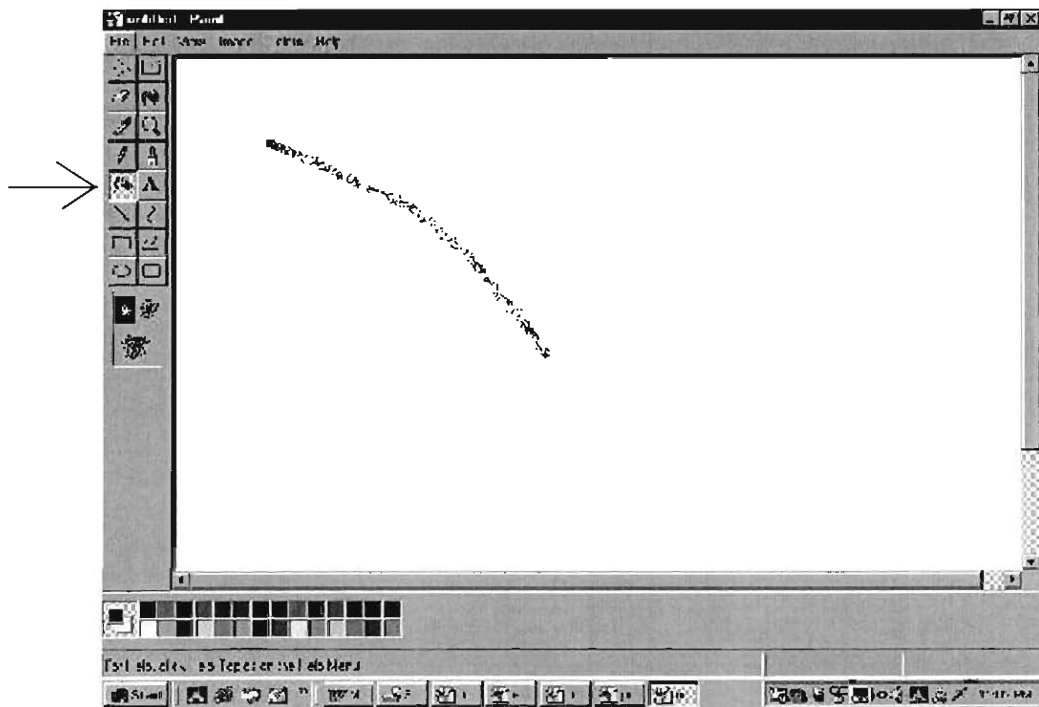
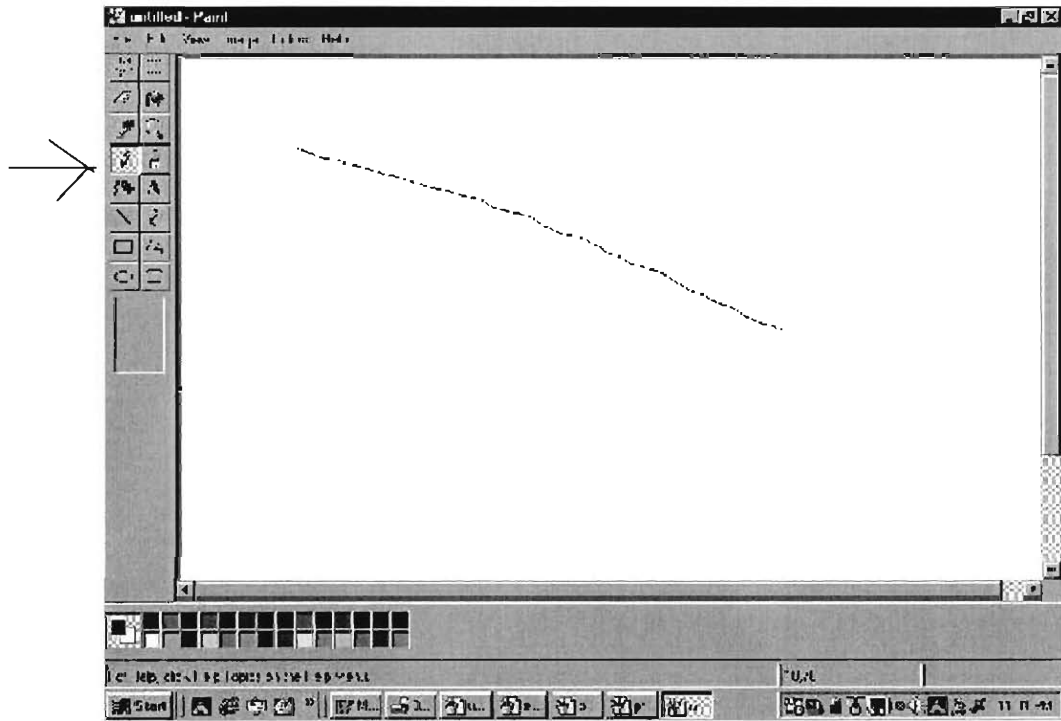


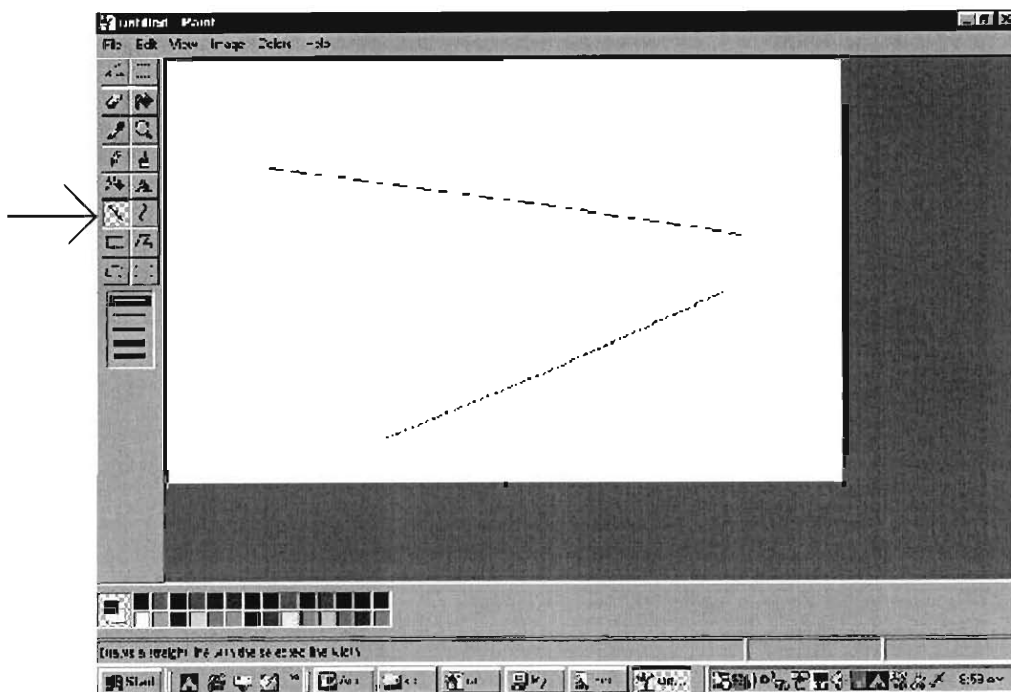
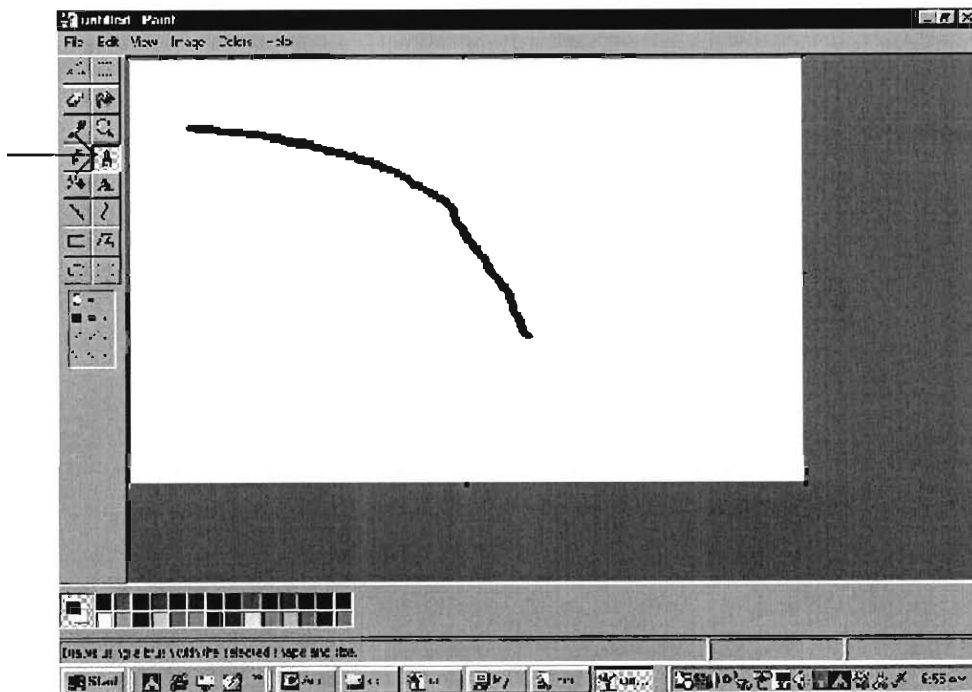


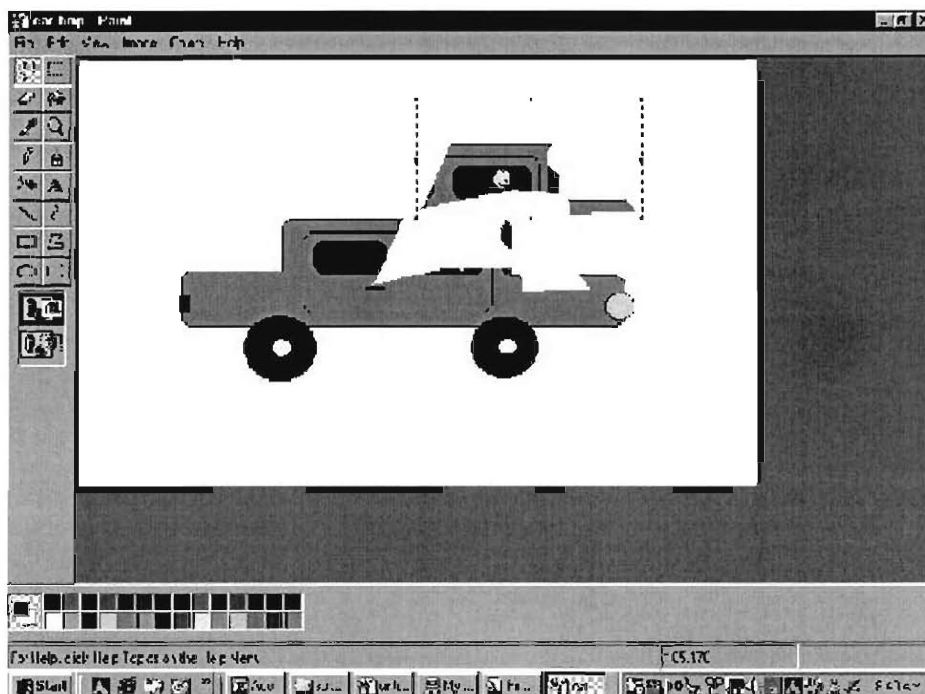
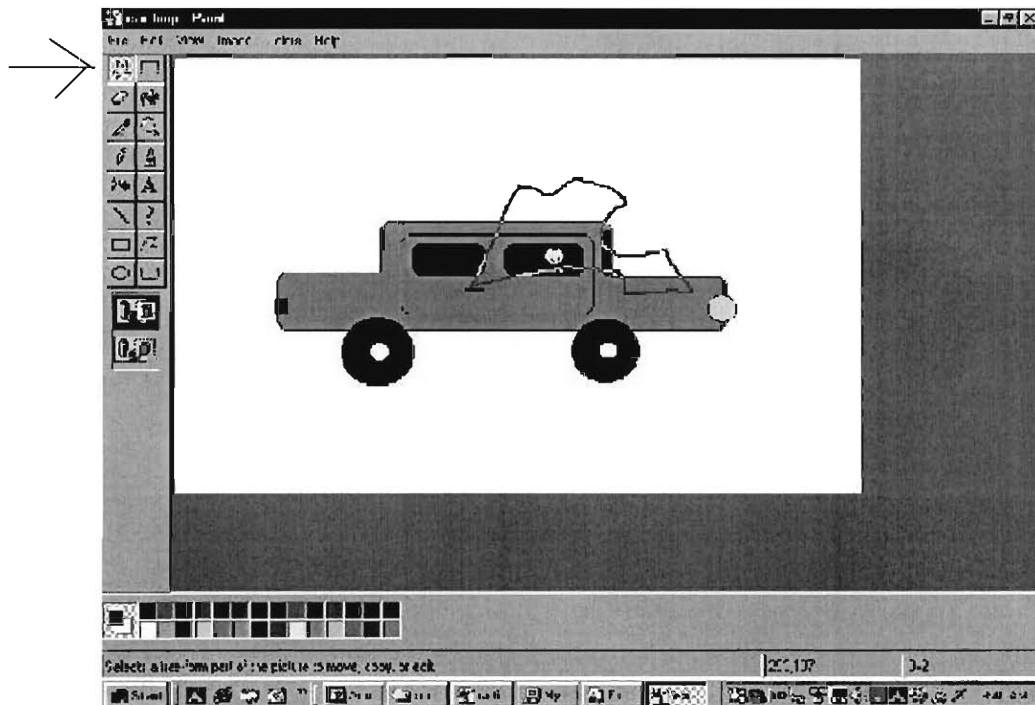
Keyboard

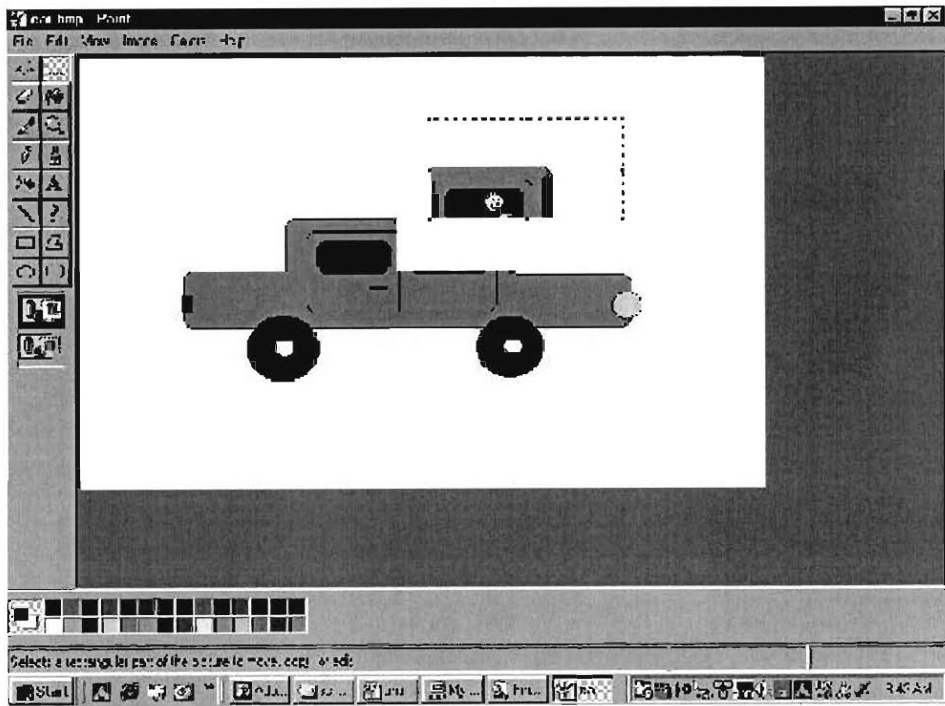
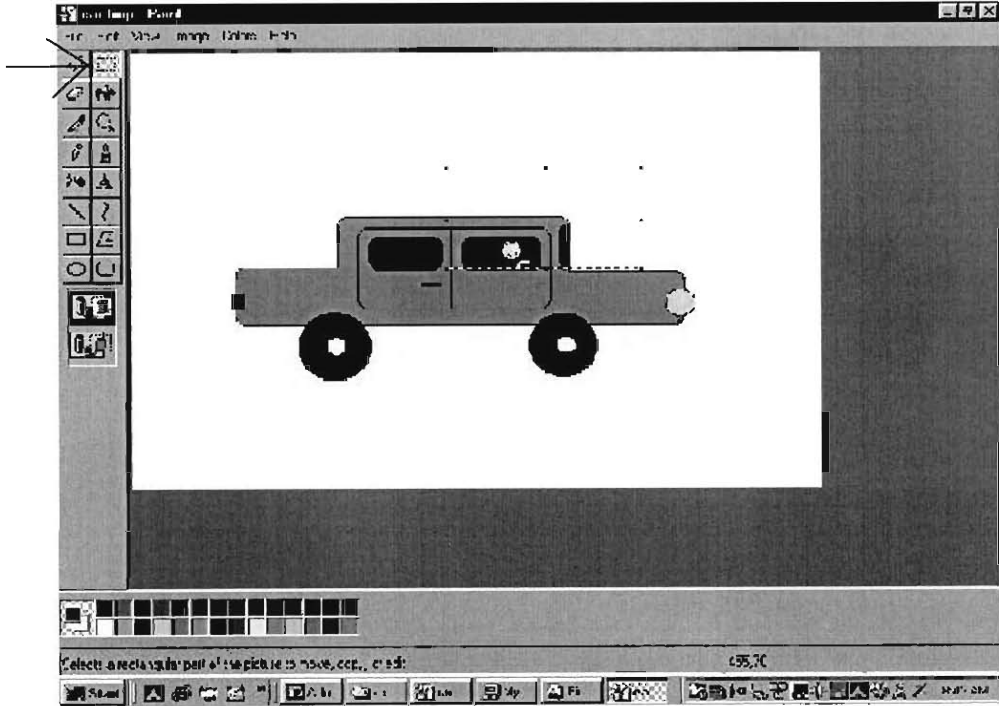
Microsoft Paint

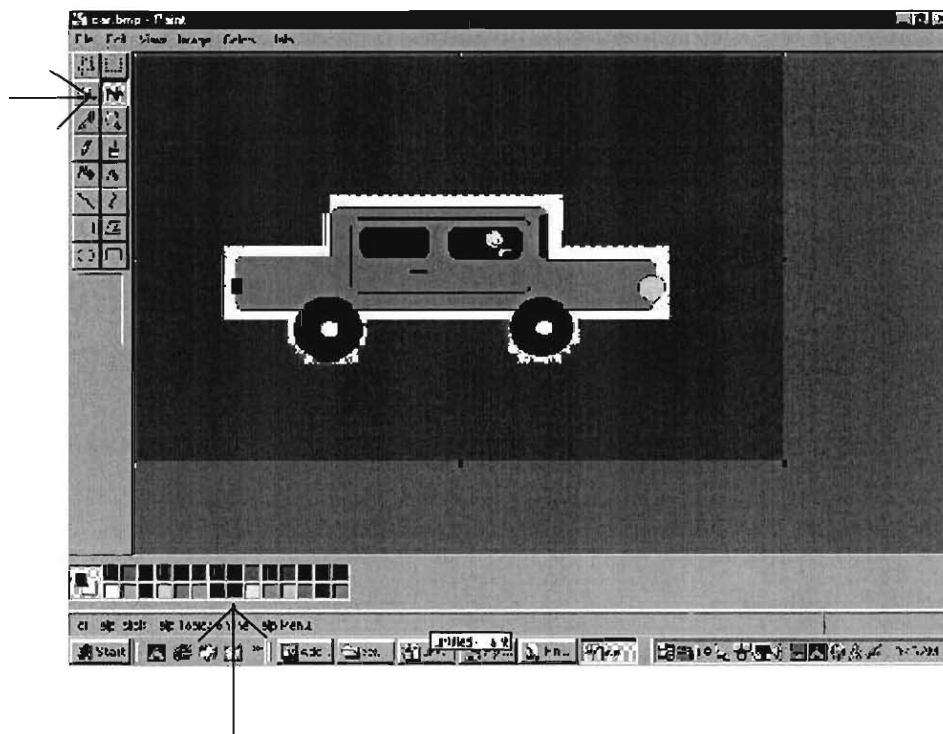
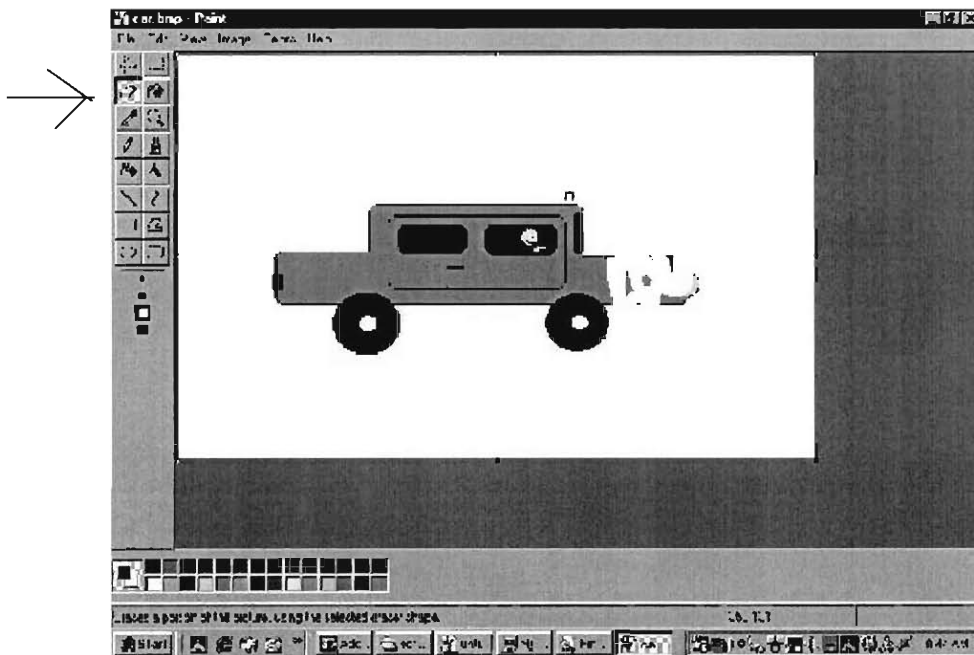


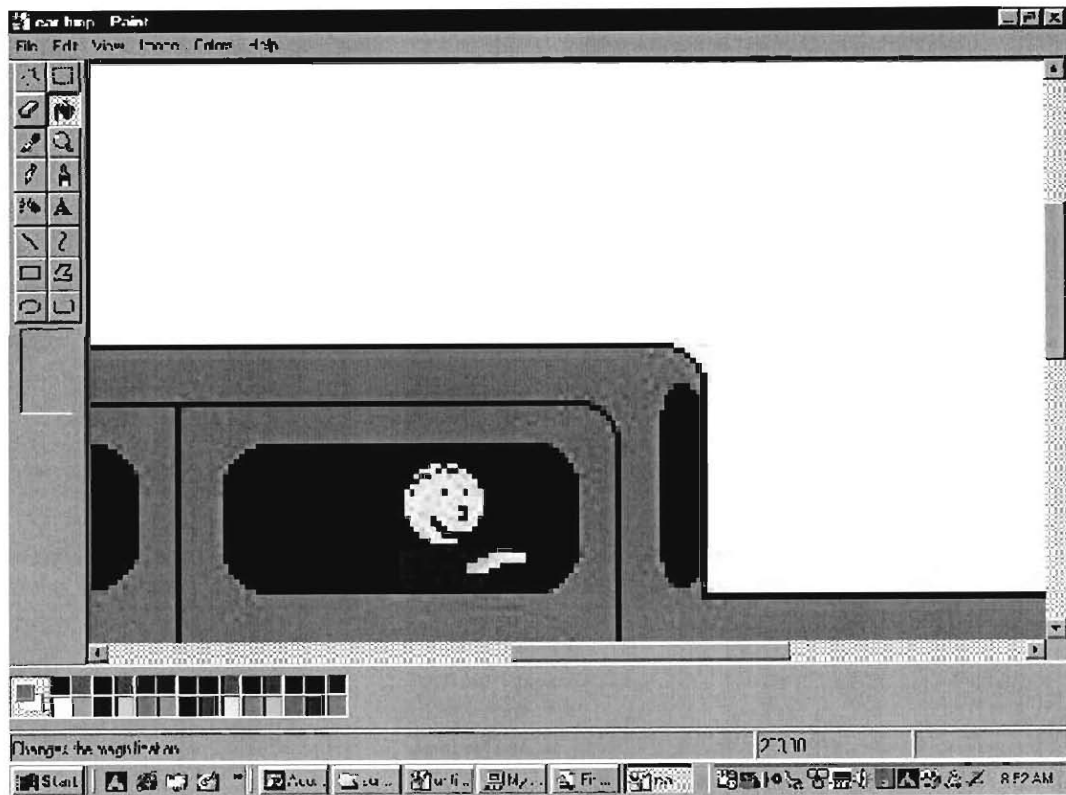
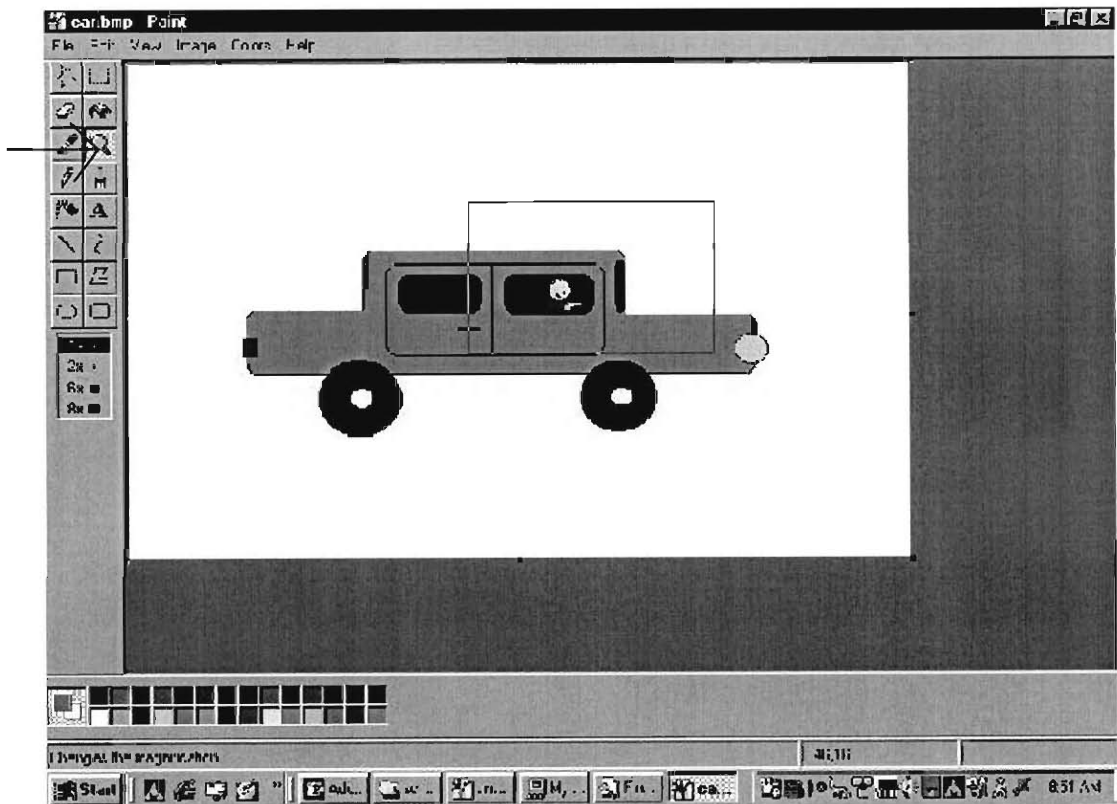


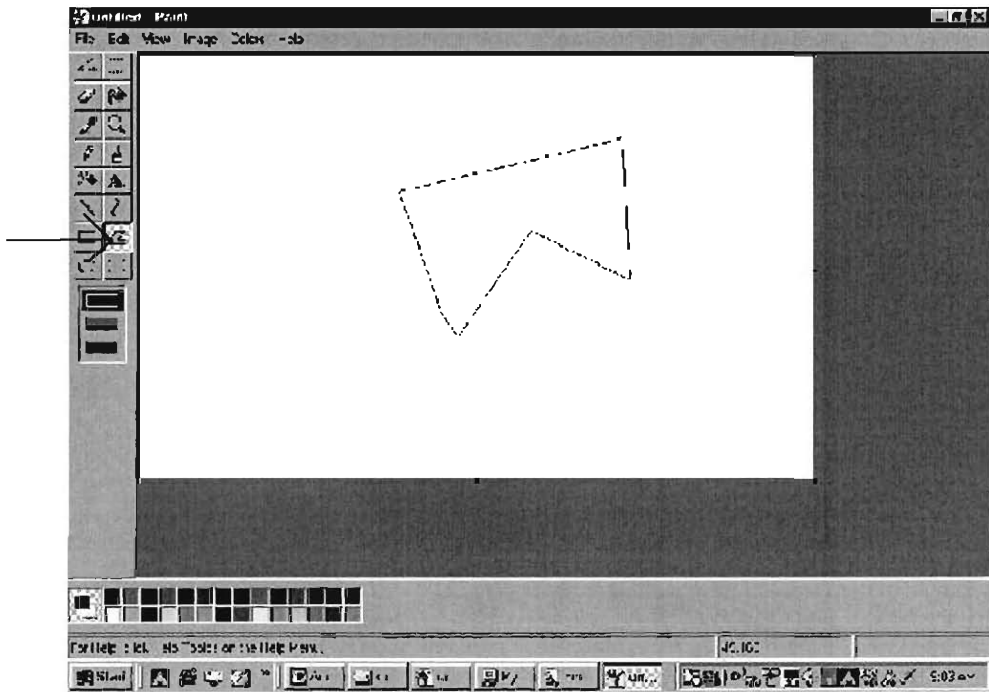
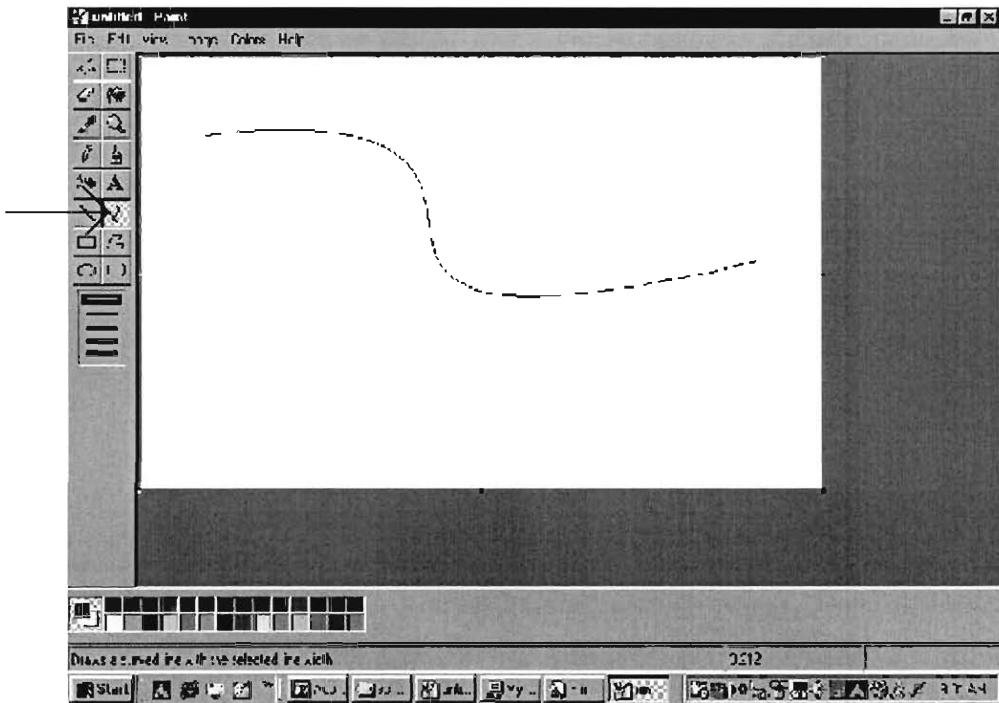


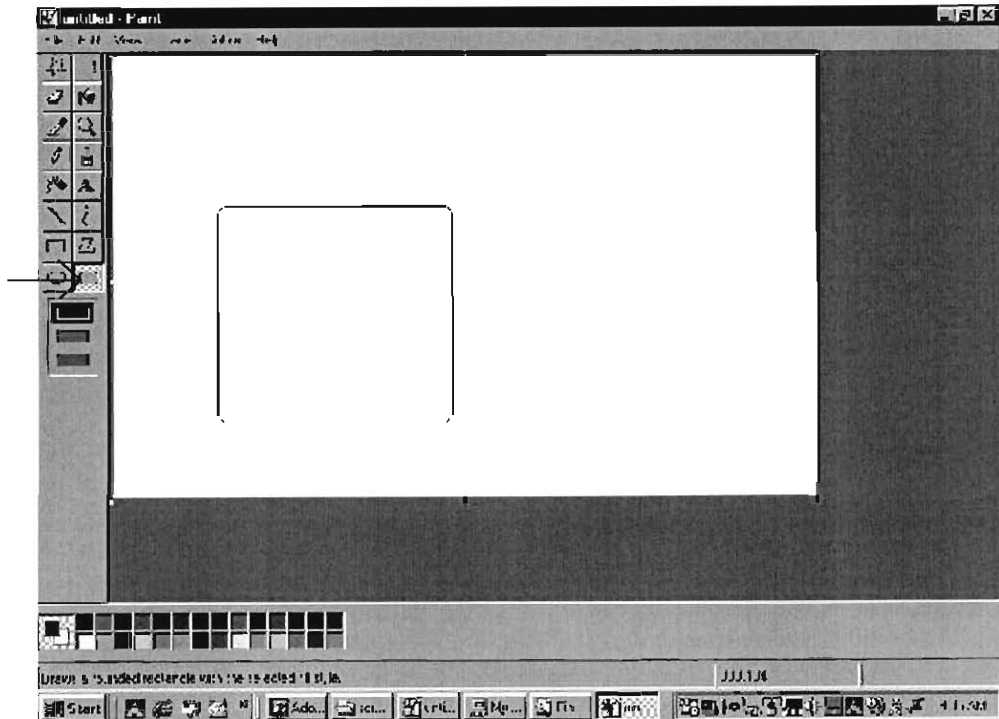
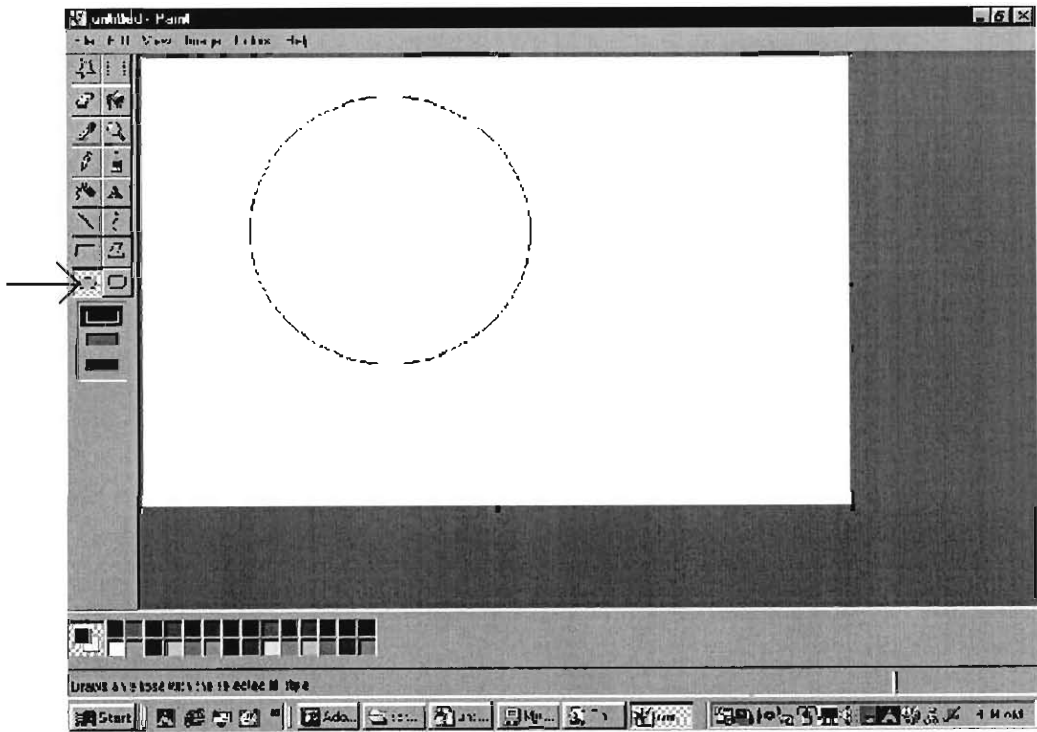


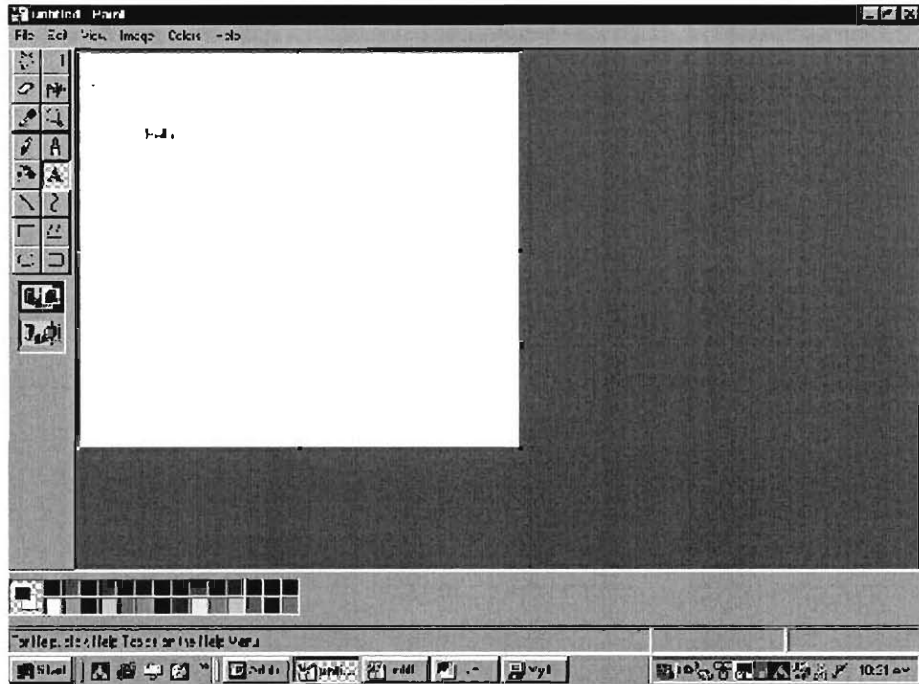












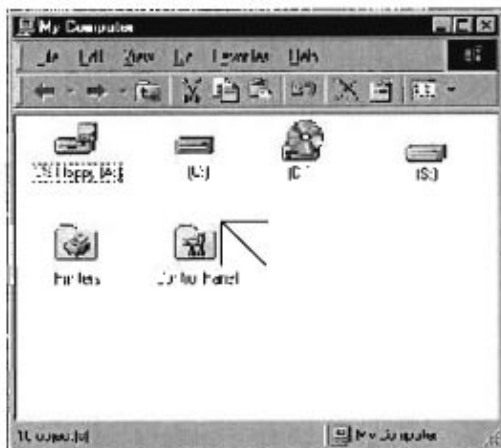
Tracing Thai Characters



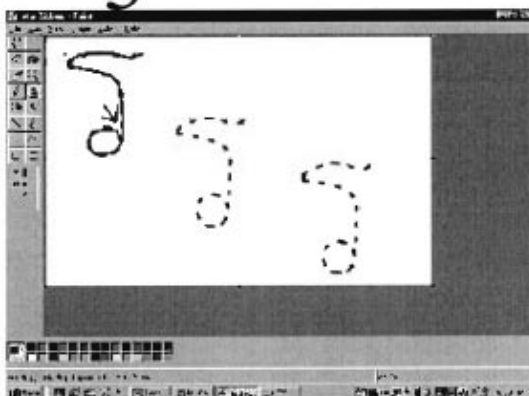
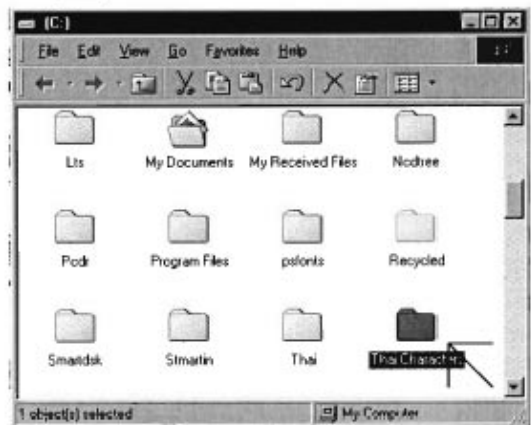
1



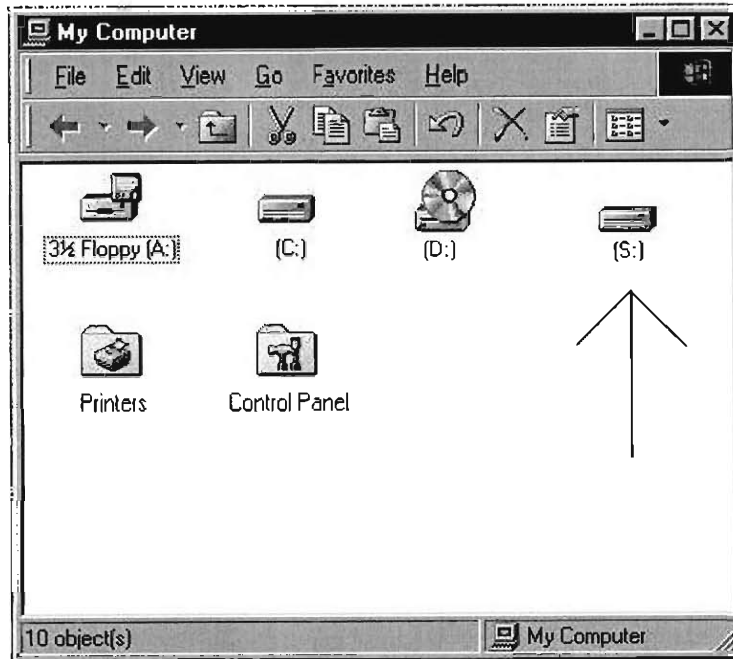
2



3



Software



Elmo's Art Workshop

Music Maker



F. Financial Breakdown of Computers Purchased

Computer Specifications				
Component	Type	Price (in baht)	Qty.	Total
Processor	Pentium III 550			
Motherboard	Gigabyte 6VX			
RAM	64 mb			
HDD	4.3 GB Ultra DMA Quantum			
Floppy Disk Drive	1.44 Samsung			
Cd-Rom	40X LG			
Sound Card	Yamaha PCI			
Video Card	ASUS Combat V3800			
Network Cards	Lanbit 10/100			
Monitor	15" Delta			
Speakers	Jester 120 Watt			
Keyboard / Mouse	Standard Bi-Lingual / PS2 Mouse			
	Total:	33,700	8	269,600

Printers				
		Price	Qty.	Total
Laser Printer	HP LaserJet 1100	15,900	1	15,900
Color Ink Jet	HP DeskJet 810C	5,800	1	5,800
	Total:	21,700		21,700

Network				
		Price	Qty.	Total
Hub	Acer Hub 16 Port UTP/BNC 10Mb	5,280	1	5,280
Network Cables	3 Meter UTP AMP Cable	185	8	1,480
Network Cables	5 Meter UTP AMP Cable	130	3	390
	Total:	5,595		7,150

Upgrades to Teachers' Computers				
		Price	Qty.	Total
Mouse	Windows Mouse	100	1	100
Sound Card	Yamaha PCI	490	1	490
Speakers	120 Watt Jester Speakers	250	1	250
	Total:	840		840

Miscellaneous				
		Price	Qty.	Total
Power Strips	6 outlet power strips (3 grounded)	275	3	825
Power Strips	6 outlet power strips (all grounded)	325	3	975
Security Cables	Kensington Desktop Microsaver	1,340	8	10,720
Floppy Disks	Sony 3.5" Formatted Disks (10/box) for children	99	2	198
Floppy Disks	Sony 3.5" Formatted Disks (10/box) for teachers	139	2	278
Children's software	Thai Children's Software	190	3	570
Children's software	Thai Children's Software	439	1	439
Children's software	American Children's Software	874	2	1,748
Ink Cartridge	HP Ink Black & White for DJ 810c	1,160	1	1,160
Ink Cartridge	HP Ink Color for DJ 810c	1,290	1	1,290
Labels	Sticker labels for computers in lab	190	1	190
CD Tower	CD Tower	115	1	115
Disk Case	Floppy Disk Case (lockable)	79	1	79
Super Glue	Super Glue for Security Cables	23	4	92
Duct Tape	Duct Tape for securing cables to floor	107	1	107
	Total:	6,645		18,786

Grand Total: 318,076 Baht

G. Daily Journal of Activities

Monday, Jan. 10, 2000

Completed Activities

We met our liaison for the first time, Khantong Dalad. He is the computer maintenance person at the Duang Prateep Foundation.

Email address – dpf@internetksc.net.th

Telephone – 249-3553, 249-8842

We gave Khantong our proposal for his perusal. He gave us a little bit of information on the current state of the computers at the DPF.

In the afternoon, the three of us took a trip to Pantip Plaza which is a very large technology plaza. We got various fliers with prices of hardware that we may purchase in the future.

Goals for tomorrow

Visit the DPF with Professor Lemone to get a more detailed idea of their technology and listen to their input on our proposal. We want to see what we have to work with and what we will have to bring to the DPF.

Tuesday, Jan. 12, 2000

Completed Activities

We went to the DPF with Professor Lemone at 9:00 this morning.

Duang Prateep Foundation

Lock 6

Art-Narong Road

Klong Toey, Bangkok 10110

Telephone Number – 249-3553

Fax Number – (662) 249-5254

We watched a video about the problems in Klong Toey. In the middle of the video, Khru Prateep came in to meet us and learn about our project. We also met the chairman of the executive committee for the DPF, Vithavas Khongkhakul.

Vithavas Khongkhakul, Ph.D

Telephone Number – (662) 249-3553

(662) 249-8842

They thought our proposal needed work in the area of assessment and the actual teaching program. They would like us to come up with a means of assessing the children after we teach them. We also need to come up with a more detailed plan on exactly what we are going to teach to both the teachers and the children. They would like us to start teaching as soon as possible. We told them we should be ready for our first lesson (for the teachers) on Monday.

They had several computers which we will be able to use to teach the teachers. They had 4 166's with 16 MB of RAM, CD ROMS, speakers, and running Windows 95. We took an inventory of what else we would need to buy to prepare for Monday.

We need:

- 1 sound card
- 1 set of speakers
- 1 mouse

There about 280 Kindergarten students and 15 teachers.

Khantong showed us the room we will be using for the Kindergarten's lab. It is on the 2nd floor of the DPF which will be good for security issues. The DPF has a guard on duty at the front floor. We took pictures of both labs.

We ate lunch with Khantong, Vithavas, and Professor Lemone.

Goals for Tomorrow

We will work all day on the teaching program. We need to brainstorm on more detail of the games, and educational tools we will use to teach the computers. We will have to focus mainly on our teaching program for the teachers since we will be starting with them on Monday. We will (possibly Mike) go to Pantip Plaza to look for software that we may be able to use in our teaching program. We will also look for the inventory that we mentioned above. We will also do our best to contact McKinsey Corporation. We need to go over all the fliers we obtained at the Plaza and find out where we want to buy the hardware. We also have to write on a proposal of what hardware we are going to need and the reasons we need it. This information can be passed on to Henry Strage to legitimize our future purchases.

- Get children's software
- Get a "dummy" guide to Windows (in Thai if possible)
- Get needed inventory
- Develop several teaching strategies
- Organize strategies in several sessions which we will teach

Wednesday, Jan. 13, 2000

Completed Activities

Today, we devised a teaching plan for our first session with the teachers. We roughly sketched it out in a notebook.

We also took a trip to Pantip Plaza where we located reasonable prices for our future computer purchases. We purchased the sound card, mouse, and speakers.

We found that a good place to purchase the equipment is B-Side Com. They seem to have the best price for the computer system we're looking to purchase. We hope to be able to purchase 8 of these systems, a black and white laser printer, and a hub and cabling to network the computers together so they can share the one printer.

We set up a meeting with the representative from McKinsey for Saturday at 3:00.

Goals for Tomorrow

We will visit the DPF and take digital pictures of the components of a computer. We will then insert these pictures into the lesson plan to use when teaching the teachers. We will label all the pictures and also write out instructions. We will ask Khantong if he would translate these instructions and labels into Thai.

Thurs. Jan. 13, 2000

Completed Activities

We took digital pictures of all components of the computers at the DPF. We came back to the university and put together the first lesson plan which will be used for the teachers. We used the pictures we took at the DPF as well as some screenshots of different software.

Goals for Tomorrow

We will go to the DPF and ask Khantong his opinion on the first lesson plan. We will also ask him to translate anything he thinks is necessary. We will make sure the computers are in working order for Monday and practice the first teaching session.

Then, we will go back to the university for a 5 minute presentation on our goals as we know see them after being here a week.

Fri. Jan. 14, 2000

Completed Activities

We went to the DPF and showed Khantong our first lesson plan. He liked it a lot and said it wouldn't be necessary to translate it into Thai. He said it would be a better idea to let the teachers take notes for themselves. We also met with one of the teachers' assistants' to go over a teaching schedule for next week.

In the afternoon, we gave a 5-minute presentation on how our goals have changed since we arrived in Thailand.

Goals for Monday

Hold 2 1-hour teaching sessions for the teachers. If time permits, give them assessment 1. If not, we can give it to them at the beginning of the next session.

Go to the library and work on Lit. Review. Prepare it to turn in on Thursday.

Sunday Jan. 16, 2000

Completed Activities

We met with Titaporn Chalongviriyalert, a representative from McKinsey. We told her the prices we found for computers at Pantip Plaza and told her where we stand in the project. She said she would check with their IT personnel to find out if they can get computers for a better price. She said she would email Henry Strage to tell him about our meeting.

Titaporn Chalongviriyalert
McKinsey & Company, Inc.
Thailand
24th Fl., M. Thai Tower, All Seasons Place,
87 Wireless Road, Bangkok 10330

Telephone: (662) 654-0166 Ext. 194
Fax: (662) 654-0177
Mobile: 01 841 1115
Email: titaporn_chalongviriyalert@mckinsey.com

Monday Jan. 17, 2000

Completed Activities

Well, our plans have changed a little bit...but it's not a big deal. We thought we would be teaching for two 1-hour blocks. It turns out we were scheduled for two 3-hour blocks. So, our teaching program ran a little short, but they just used the extra time to play around in Microsoft Paint. The first teaching session went very well. The teachers seemed to enjoy themselves. We took lots of pictures. We went over the following topics: Turning on the computer, Parts of the computer, Opening a program, and Microsoft Paint.

After 2 weeks, 8 teachers will have completed 4 lessons. Then, the other 8 teachers will take 2 weeks to complete the same 4-lesson plan. So, after 4 weeks, all 16 teachers will be through the entire lesson plan.

Goals for Tomorrow

We will put together Lesson Plan 2. We will also work on the Literature Review which is due Thursday. We will also go to a software store which Nick Holloway recommended in search of Thai children's software.

Tues. Jan. 18, 2000

Completed Activities

Today, we put together Lesson Plan 2. We also did some research on Seymour Papert for the Literature Review. We edited the Literature review.

Goals for Tomorrow

We will go to the DPF and have Khantong look over Lesson Plan 2. We will also go to the software store that Nick Holloway recommended. In addition, we will finish up the Literature review and make a few changes to Lesson Plan 2.

Wednesday Jan. 19, 2000

Completed Activities

We went to the DPF and had Khantong approve Lesson Plan 2. We also took pictures of the DPF and Klong Toey to use in our Literature review. We found a piece of Thai Children's software. We edited Lesson Plan 2 and also finished our Literature review.

Goals for Tomorrow

Tomorrow, we will go to the DPF for Teaching Session 2.

Thursday Jan.20, 2000

Completed Activities

We taught our second lesson plan today. We taught Group 1 in the morning and Group 2 in the afternoon. Group 1 seems to be doing better, but Group 2 is catching on as well. We went over the following topics: directories, drive, file extensions, finding a document, and using Microsoft Word. We went over many topics in Microsoft Word such as Bold, Italics, Underline, Opening, Saving, Inserting pictures, etc. We also showed Khantong the children's software we bought and found out that it was geared towards older children and won't be useful for the kindergarteners. However, he said Nick's software would be very useful. So, we need to see if we can find more of the same software.

Goals for Tomorrow

We will work on our presentation and give it at 2:00. We also will look for more software about nature (as Khantong suggested).

Friday January 21, 2000

Completed Activities

Jen and Mike gave the presentation at 2:00. Melissa couldn't because she was sick.

Goals for Monday

We will teach Lesson Plan 3 which covers the following topics: inserting clip art, cut, copy, paste, printing, and CD-ROMs. We will spend a substantial amount of time at the beginning of the class reviewing and then take assessment 3.

Monday January 24, 2000

Completed Activities

We taught Lesson 3 to the teachers. We went over the following topics: Inserting clip art, printing, cut, copy, paste, CD-ROMs, and one piece of software. The software was Elmo's workshop which is a paint program similar to Microsoft Paint. The teachers thought it would be excellent software to use with the children. They had a lot of fun themselves!

We found a downloadable jigsaw puzzle maker that will be excellent to use with the children. They will be able to turn their favorite pictures into jigsaw puzzles that can be put together on the computer.

Goals for Tomorrow

Tomorrow, we will have our weekly meeting with Professor Lemone in the morning. We will then spend the day working on our Methodology to turn in the first draft. We will also begin working on Lesson Plan 4.

Tuesday January 25, 2000

Completed Activities

We just about completely re-wrote our Methodology today. We inserted lots of great pictures as well. A very productive day.

Goals for Tomorrow

We will finish up the Methodology in the morning and turn it in before noon. Then we will go to the DPF to discuss Lesson 4 with Khantong. We also need to take a picture of the existing lab with Mike's camera.

Wednesday January 26, 2000

Completed Activities

We finished up the Methodology in the morning. We then planned out Lesson 4.

Goals for Tomorrow

Teach Lesson 4.

Thursday January 27, 2000

Completed Activities

We completed our Lessons for groups A and B. Today, we reviewed lessons 1-3 for about an hour. Then, we went over restarting the computer if it happens to freeze. We also showed them about the different kinds of pointers. We wrapped up the teaching program by going over all the software that we have bought. The teachers especially liked the jigsaw puzzle program.

We discussed some things about the children's program with the morning group. They think the children should be on the computers for ½ hour during their first session. They want us to make booklets for them to help teach the children. They think all of the software we bought will be appropriate for the children.

Goals for Tomorrow

Work on updating the Literature Review. The new Lit. Review and Methodology are due next week. We begin the second round of the teaching program on Wednesday.

Friday January 28, 2000

Completed Activities

We made a lot of revisions on the Literature Review.

Goals for Tuesday

Tuesday, we plan to work on a lot of revisions on the Lit. Review and the Meth. We will also prepare to teach Lesson Plan 1 on Wednesday.

Tuesday February 1, 2000

Completed Activities

We revised half of the Methodology and wrote a couple new sections for the Literature Review.

Goals for Tomorrow

We will teach Lesson Plan 1 and Professor Lemone will come in to observe.

Wednesday February 2, 2000

Completed Activities

Well, there was a bit of a misunderstanding and it turns out that Khantong taught Lesson 1 yesterday. So, we will now be teaching Lesson 2 on Thursday. So, instead of teaching today

we worked more on revisions and also researched the pedagogy of jigsaw puzzles and music. Our Teacher Training Schedule has now been revised and we will be teaching this Thursday, next Monday, and next Thursday. We finished revising and adding to the Methodology and Literature Review.

Goals for Tomorrow

We will teach Lesson 2 with Professor Lemone observing.

Thursday February 3, 2000

Completed Activities

We went to the DPF to give lesson 2 to the second two groups of teachers. The morning group went a little slower than the other groups we've had, and Khantong is holding an extra session for them on Saturday. The afternoon group caught on fairly quickly and was able to complete the entire lesson. Tonight we're going to finish proof reading the first version of our Intro and the 2nd versions of our Lit Review and Meth so we can hand it in to Professor Lemone.

Monday February 7, 2000

Completed Activities

Today, we taught Lesson 3 to groups 3 & 4.

Goals for Tomorrow

We will work on our first draft of Results & Analysis.

Tuesday February 8, 2000

Completed Activities

We met with Professor Lemone in the morning. We discussed our Lit. Review and Methodology. We got details on what to write in our Results and Analysis. In addition, we got her feedback from watching us teach last week. She said that we were doing a good job with the teaching. She noticed that we all have different teaching styles. She said that all of our teaching styles were effective. After the meeting, we went to Pantip Plaza to buy the computers. We were quoted 277,700 Baht (roughly \$7,500) for 8 computers with:

- Pentium III 500 MHz processor
- 15" monitor
- 64 MB RAM
- Video Card
- Sound Card
- Speakers
- Thai/English Windows 98
- Thai/English MS Office 97
- Mouse
- Keyboard (Thai/English)
- Mouse pad/ dust cover
- 1-year warranty on some parts
- 3-year warranty on some parts

Also included in this price were two printers:
1100 HP Laser Jet Printer (black and white)
810 HP DeskJet Printer (color)

We were quoted 19,000 Baht for the following networking equipment:
16 port networking hub
10 patch cables
3 power strips
8 computer security kits
2 boxes of floppy disks

In the afternoon, we worked on the 1st draft of the Results and Analysis and Conclusions.

Goals for Tomorrow

Continue with the paper. Return to Pantip to leave the deposit for the computers (they will be delivered to the DPF on Thursday). Also, purchase networking equipment.

Wednesday February 9, 2000

Completed Activities

Today, we put down the deposit for the computers. We gave 141,300 baht (\$3925). We also bought the networking equipment for 19,500 baht (\$541.70). Hardware House, where we purchased the computers, said they would deliver tomorrow (Thursday) before noon. We will give the rest of the money then.

In the afternoon, we worked on writing our Results, Analysis, and Conclusion.

Goals for Tomorrow

Tomorrow, we will teach Lesson 4 for the last groups of teachers. We will be expecting the computers to arrive and will check their condition before paying.

Thursday February 10, 2000

Completed Activities

Today, we started the set-up of the new computer lab. We also finished the computer education program for the teachers.

Goals for Tomorrow

Tomorrow, we will work on the revisions of the Meth. and Lit. Review.

Friday February 11, 2000

Completed Activities

We worked on the Meth. and Lit. Review.

Goals for Tomorrow

We will meet with Prof. Lemone in the morning. We will then go to Pantip Plaza and pick up a few more needed things for the new lab. We will then go to the DPF and finish setting up the lab.

Monday February 14, 2000

Completed Activities

We met with Prof. Lemone and discussed the assessment we wrote to give the teachers. She thought we did a pretty good job with it. She gave us a few suggestions to improve it. We also gave her an update on what has been going on at the DPF in the last few days.

We then went to Pantip Plaza and picked up a few more things needed for the computer lab.

We then went to the DPF to finish up setting up the computer lab. We networked all of the computers and the 2 printers. We also applied all of the security measures for the computers.

After that, we worked on revising the lit. review and meth.

Tuesday February 15, 2000

Completed Activities

We met with the teachers at the DPF to give them some experience in the new lab before they saw the children. We went over safety in the lab, printing, and CD-ROM sharing. They told us that they would like to have a booklet to go by for teaching the first children's session.

We put the booklet together at night. In addition, we worked on revising the results and analysis.

Wednesday February 16,2000

Completed Activities

We held a teaching session with the children for the first time. The teachers (3 of them) taught the children while we walked around making sure they understood the concepts. They were introduced to the parts of the computer and then allowed to explore in MS Paint. The session lasted about 1½ hours with a 15-minute break in the middle.

At night, we worked on revising the results and analysis and conclusions. At the same time, we wrote sections for the paper about the children (we were unable to write these previously since we had not met with them).

Thursday February 17, 2000

Completed Activities

We held a second teaching session with the children. The children continued to use Microsoft Paint. In addition, they were shown how to trace Thai characters on the computer using Microsoft Paint.

Friday February 18, 2000

Completed Activities

At night, we worked on editing all portions of the paper.

Sunday February 19, 2000

Completed Activities

We put together the slides for the final presentation. In addition, we created a slide show to show at the DPF on Tuesday. We also read through Meredith, Jess, and Paul's paper for peer editing.

Monday February 20, 2000

Completed Activities

We finished with the presentation and slide show. We also went through our paper word by word to make all necessary corrections to it. In the afternoon, we met with Professor Lemone.

H. Contacts

Duang Prateep Foundation

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Fax Number – (662) 249-5254

Khantong Dalad

Computer Technician at DPF
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Telephone – 249-3553, 249-8842
Our Liaison

Vithavas Khongkhakul, Ph.D

Chairman Executive Committee at DPF
Telephone Number – (662) 249-3553
(662) 249-8842

Titaporn Chalongviriyalert

McKinsey & Company, Inc.
Thailand
24th Fl., M. Thai Tower, All Seasons Place,
87 Wireless Road, Bangkok 10330
Telephone: (662) 654-0166 Ext. 194
Fax: (662) 654-0177
Mobile: 01 841 1115
Email: titaporn_chalongviriyalert@mckinsey.com
A representative from McKinsey who thought the computers may have been less expensive through them.

Hardware House Interactive Co., Ltd.

Branch #2: Shop #152
Pantip Plaza
Telephone: 254-9797 Ext. 1152
Direct Line Tel: 256-0370
The 8 computers were purchased here.

IT City Co., Ltd.

Top Floor, Pantip Plaza
Telephone: 6565030-45 Ext. 511
The networking equipment was purchased here.

I. Assessment

I.1 English Version

Please answer the following questions to the best of your ability. Your answers will stay anonymous. The purpose of these questions is to help improve future computer education at the DPF.

How well do you think you understand the concepts that were taught to you?

Do you know:

the components of a computer?

_____yes

_____no

how to start a program by yourself?

_____yes

_____no

how to correctly shut-down the computer?

_____yes

_____no

how to create a directory?

_____yes

_____no

how to find a file?

_____yes

_____no

how to save your work?

_____yes

_____no

how to print?

_____yes

_____no

how to use a CD-ROM?

_____yes

_____no

Do you think you learned enough to get started teaching the children?

What else would you like to learn?

Which concepts have you learned that will be important for the children to understand?

What did you think of the teaching styles of:

Melissa:

Jennifer:

Michael:

Do you think the computer teachers behaved appropriately in the classroom:

Melissa:

Jennifer:

Michael:

Did you feel comfortable during the teaching sessions?

How did you feel about learning through a translator?

What do you plan to teach the children when we leave?

1.2 Thai Version

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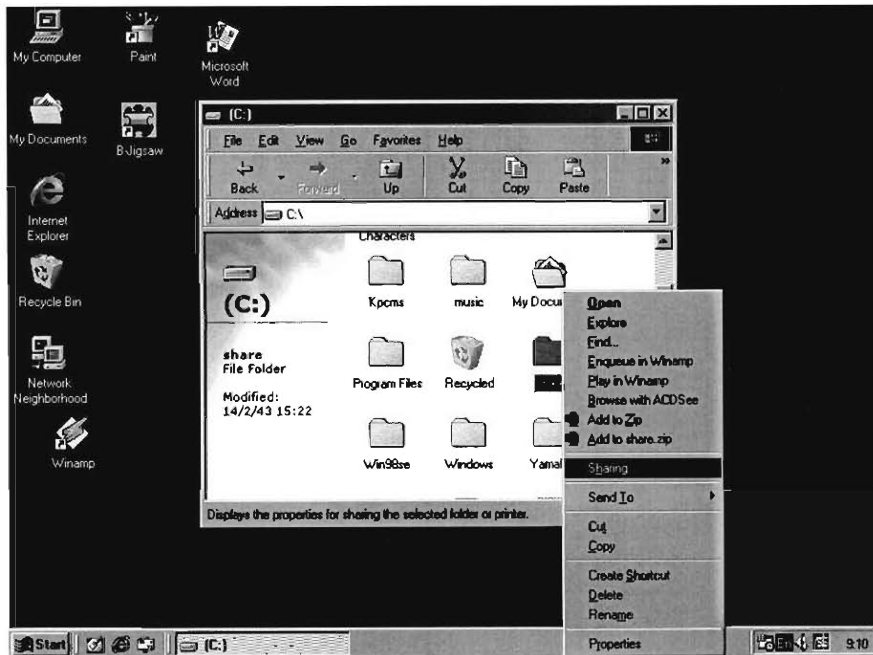
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J. Network Manual

Networking Essentials for the Children's Computer Lab at The Duang Prateep Foundation



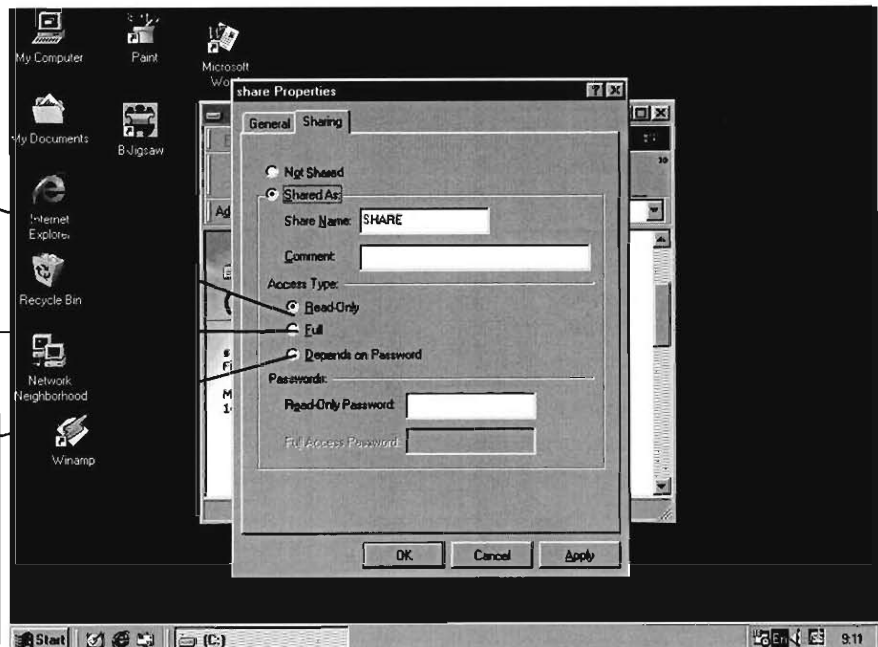
File Sharing



Users can only read the files that are being shared.

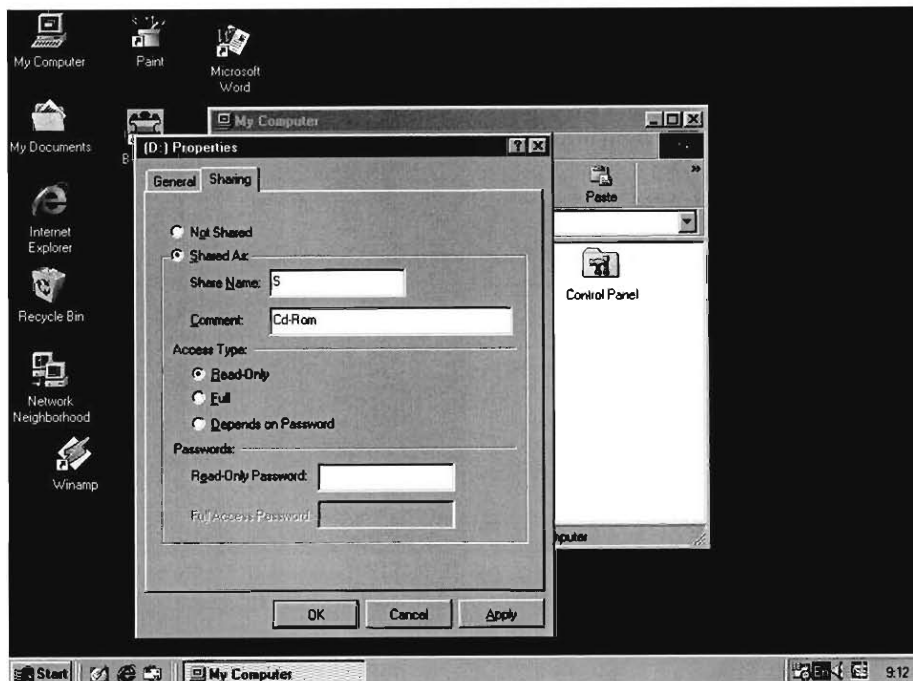
Users can read and write to the files being shared.

The password supplied affects whether the user can just read or can also write to the file.



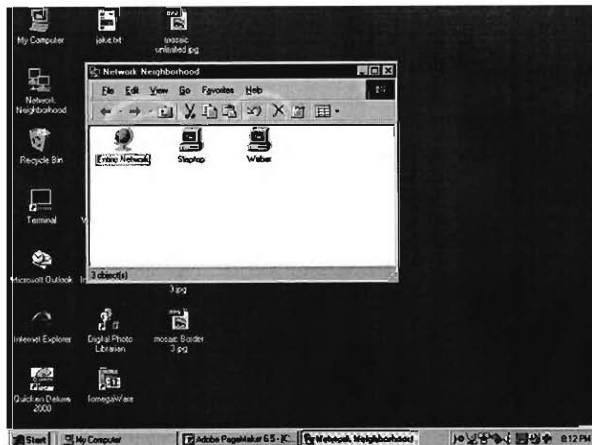
In order to share files, simply follow the pictures on the screen.

CD-ROM Sharing



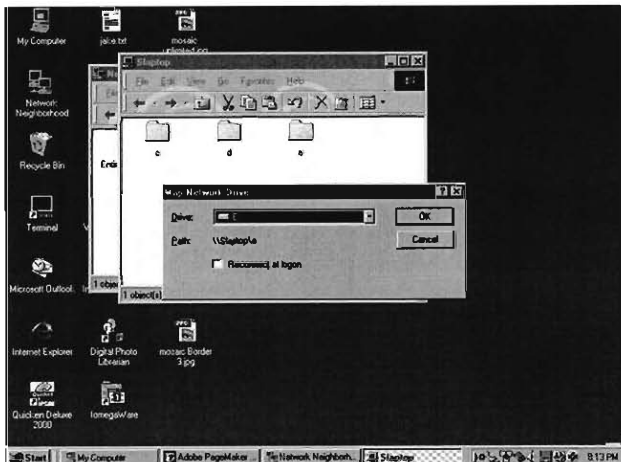
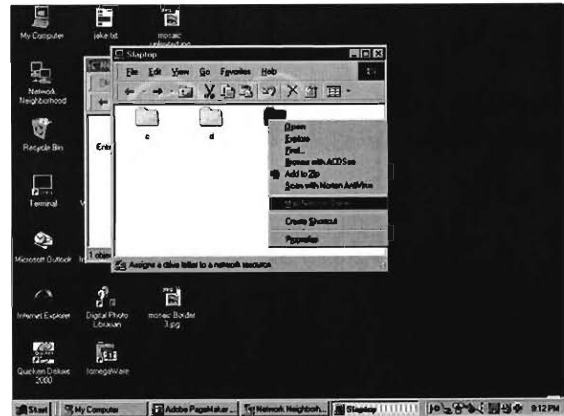
There are 2 CD-ROMS that are shared between computer 1 and computer 8. Computer 1's CD-ROM is for computers 1, 2, 5 & 6. Computer 8's CD-ROM is for computers 3, 4, 7 & 8.

Mapping a Network Drive



Double-click Network Neighborhood to bring up this screen.

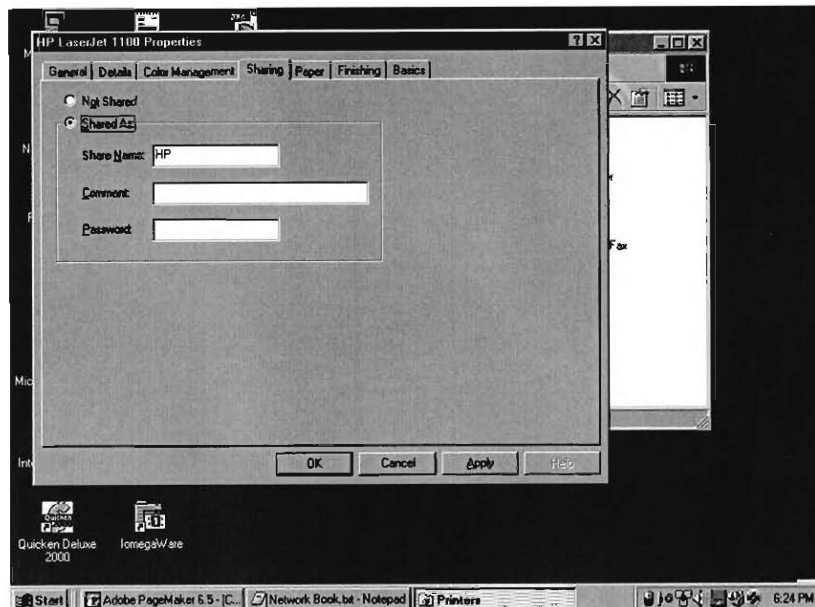
Double-click on the computer that has the resources you want to map.
Then right click on the shared resource.
Choose Map Network Drive from the Menu.



A new screen then pops up. If you want to connect to this share in the future then click "reconnect at logon"; otherwise, just choose OK.

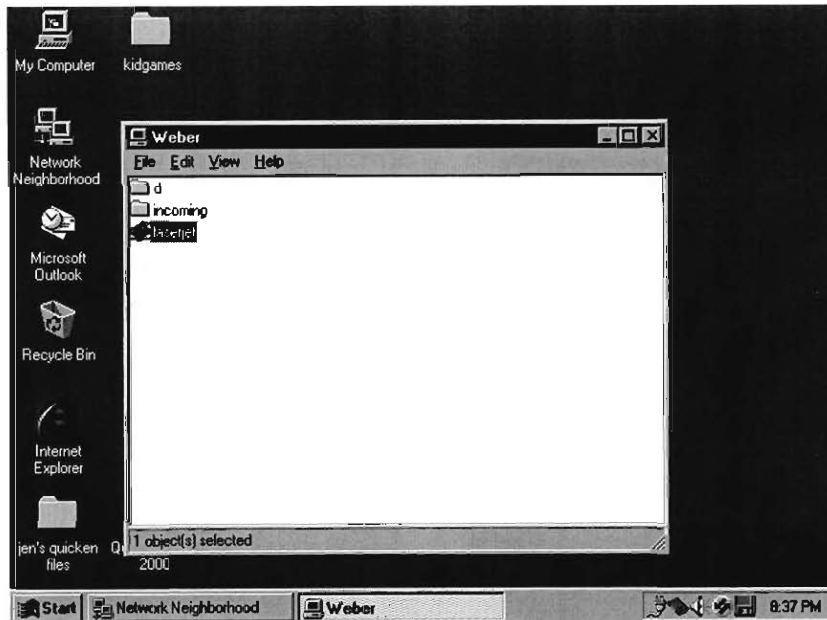
Now if you go to My Computer, you will see that the drive is mapped there and waiting for you to use it.

Print Sharing



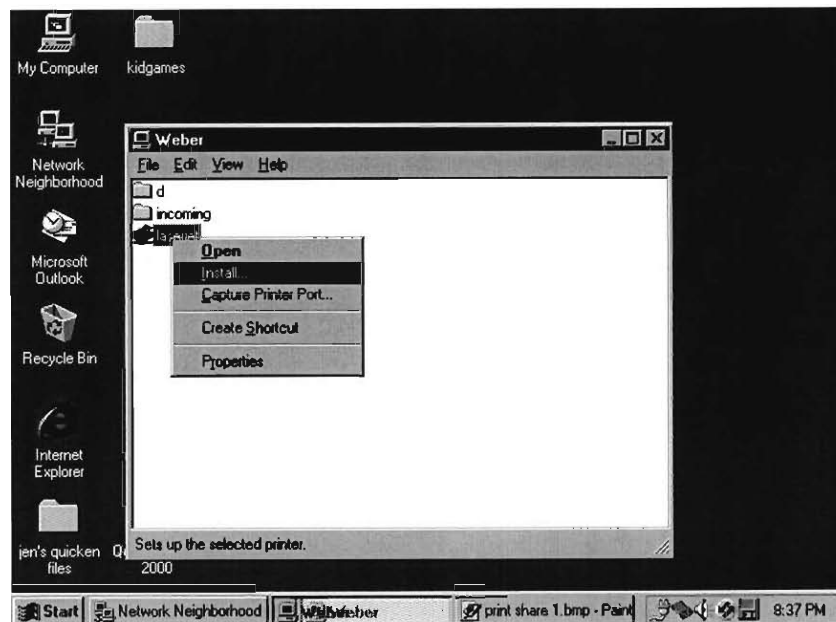
Follow the pictures to make sure that the printers are shared.

Mapping A Printer

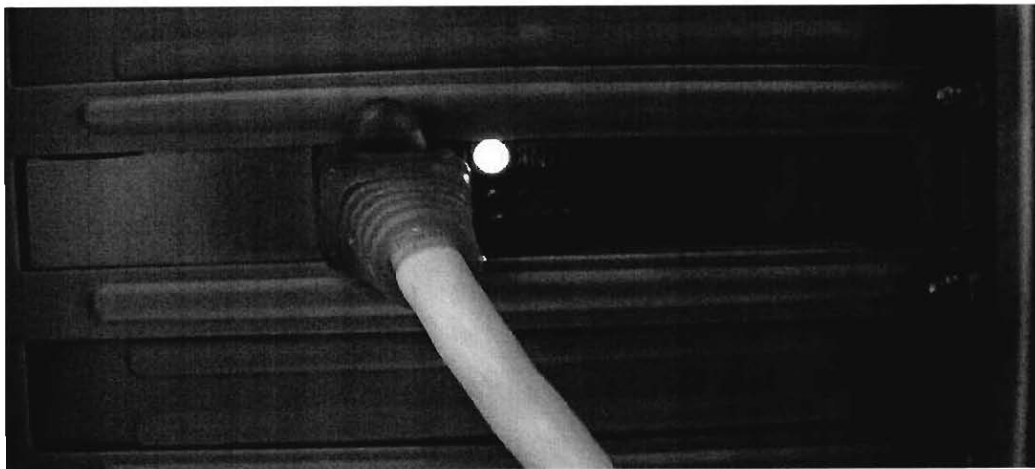


First you need to find the computer that the printer is connected to.

Right click and choose install. Now follow the onscreen directions.



Network Problems



If the network does not seem to be working for a particular computer, there are a few things that you should do.

1. Look at the network hub and make sure that that computer's light is on. The number written on the computer is the same as on the hub and is also the same for the computer's IP address. The IP's are assigned as "192.168.1.x" where "x" is the number of the computer.

2. If the light on the hub is not lit, look at the back of the computer.

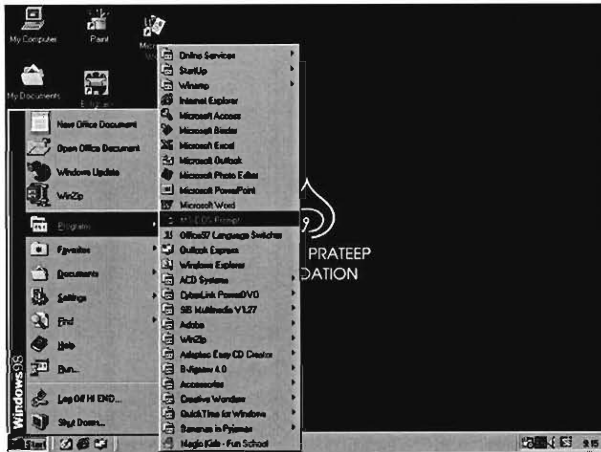
Make sure that the connection is tight.

3. Go to a DOS prompt and make sure that you can "ping" another computer. This make sure there is a connection between the two computers.

4. Do this by typing "ping 192.168.1.x". Pick a different computer whose light is on.

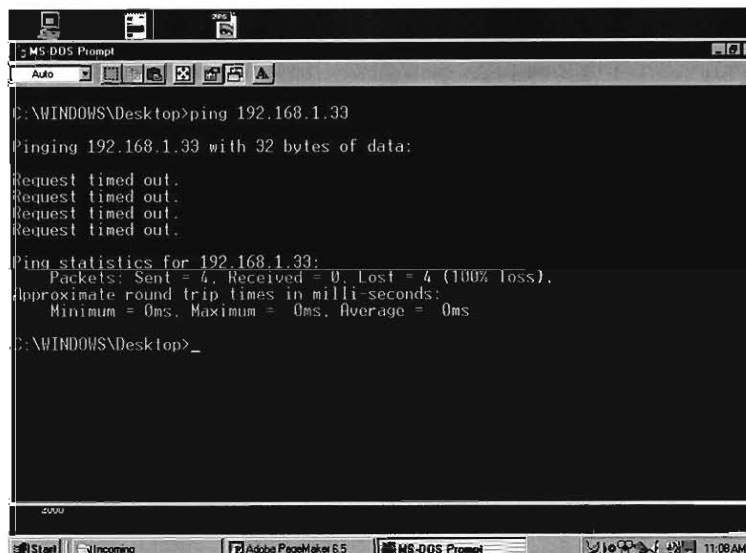
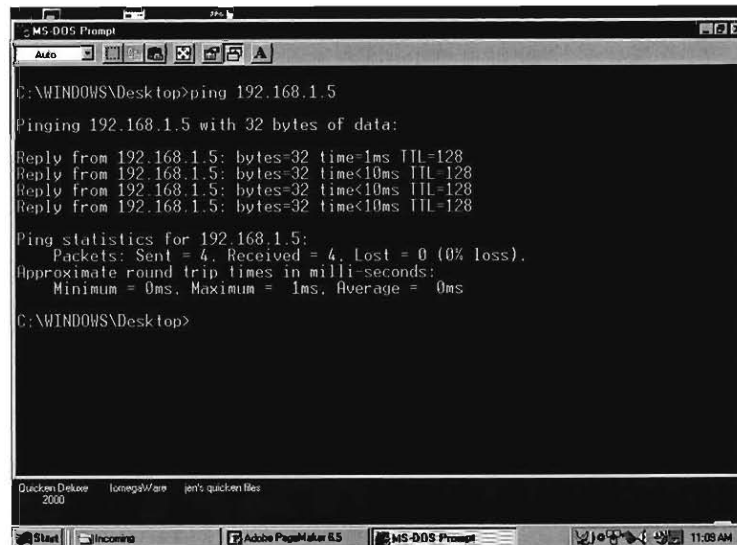
(See the next page for pictures explaining above.)

Ping



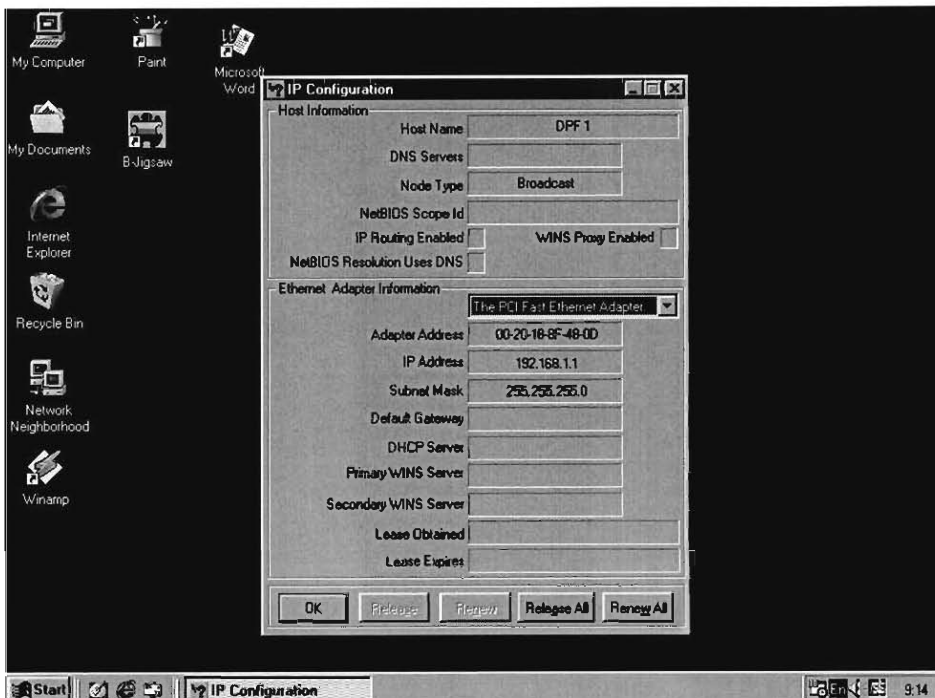
Go to the MS-DOS Prompt to bring up a Command Prompt.

This is the response that you should receive from the computer if the computer that you are pinging is up and running.



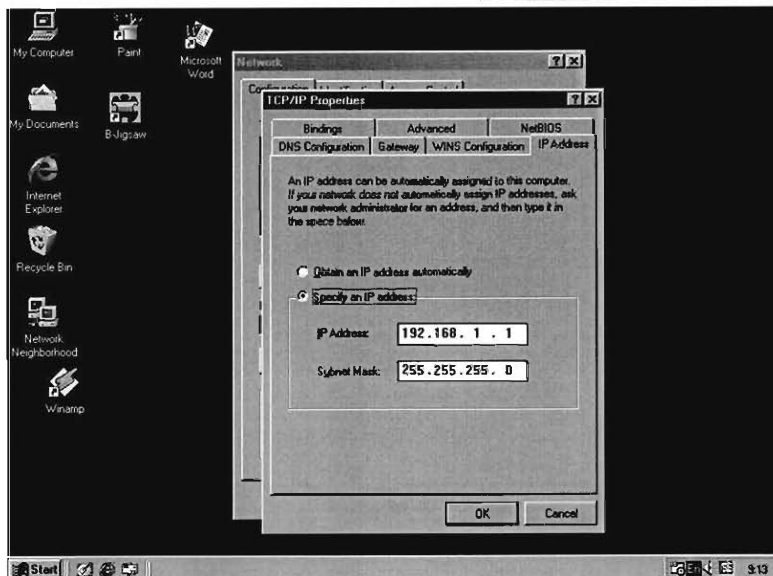
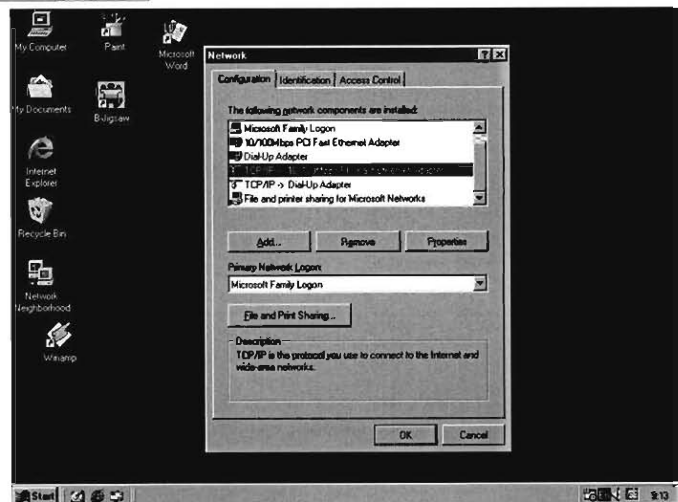
If the computer that you are pinging is not working, or your computer is not working, then this is the response that you will receive.

WinIPCFG



WinIPCFG is a program that shows the network configuration of the local computer.

Network Properties



You will use the network properties to modify the computer's network settings. You can change the computer's IP address, and subnet mask here. The Subnet Mask should be 255.255.255.0.

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This is a Forum paper saying that computers can teach. It breaks teacher down into 2 categories: magisters and pedagogues. It suggests that in order for a computer to teach, it would have to be a pedagogue. That is, it suggests that the computer should be a task-setter. It should also be highly flexible and responsive, rather than very methodological.

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