

# Computer Labs for Literacy Groups



## A practical guide

The P<sub>4</sub> Literacy Project  
A Cost-Shared Literacy Project

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## **Introduction**

Basic computer skills play a growing role in determining individual success in our society. Increasingly, access to community services is being provided through the Internet. Distance education courses are using computers to distribute educational materials, facilitate communication between students and instructors, and to provide forums for discussion between students. Most of the students who come to The Write Place in Parksville for help with literacy skills do not have access to computers or to the opportunity to gain computer skills. The P<sub>4</sub> Literacy Project was set up to provide students with access to computers, to the Internet and to Literacy BC's Literacy Network. This report outlines the process we went through to set up the lab at The Write Place, and how the lab was used once it was up and running. The report is divided into two main sections, on setting up the lab, and on running it. A detailed explanation of some computer terms is provided in Appendix A as a reference for other groups planning to set up a computer lab.



## I. Setting up a computer lab

How you set up your lab space, your hardware and your software will depend on what you want to do with the lab. Based on our experience at The Write Place, we recommend a process like the following:

- 1) Set objectives
- 2) Choose software to meet objectives
- 3) Choose hardware based on requirements of chosen software
- 4) Choose an Internet service provider
- 5) Allocate and set up lab space

### ***The Write Place Computer lab: a case study***

In this section we will examine each of these steps, using The Write Place experience to illustrate.

#### **1. Setting objectives**

Objectives are set first because you will base your software choices on the objectives of your project. Your objectives might be to provide students with computers to practice skills like typing or math, or to provide students with the opportunity to do word processing.

The P<sub>4</sub> Literacy Project had the following stated objectives:

1. To **promote** communication and mutual support between adult literacy students.
2. To **provide** access to that communication and support through the Internet
3. To **produce** written confirmation of skills learned and share information with other literacy students in the form of an information booklet (this document).
4. To **partner** with Literacy BC and take a leadership role in developing a conferencing chatline for students (the BC Literacy Network).

An additional objective that emerged as we worked on the project was to provide students with basic computer skills, including word processing.

## 2. Choosing software

The next step was to choose software that would allow us to meet our objectives. First, we needed to choose Internet software. The main programs available in this category are Netscape 4.0 and Internet Explorer 4.0. Since these programs are available for free, we used both. Second, we needed to choose word processing software. We chose Word for Windows 97 because many Write Place students use that program at the local community college. The choice of Word For Windows 97 necessitated the choice of Windows 95 as an operating system. Finally, we needed to use the FirstClass Conferencing program to access the BC Literacy Network.

Table 1, below, presents the software we choose.

Category	Software
Internet browser/ e-mail.	Netscape Communicator 4.0 Internet Explorer 4.0
Word Processing	Word for windows 97
Conferencing (BC Literacy Network)	FirstClass Conferencing
Operating system	Windows 95

**Table 1. Software chosen for The Write Place computer lab.**

## 3. Choosing hardware

All software comes with recommended hardware requirements. Once you've chosen your software, check the recommended requirements for that software. Most software will list both minimum required hardware and recommended hardware. In general, users will find that running software using hardware that meets minimum requirements is frustratingly slow. It is a good idea, therefore, to choose hardware that meets or exceeds the recommended hardware. Table 2 lists the hardware requirements for the software we chose.

Software	RAM	CPU	Hard disk space
Internet Explorer	12 MB	A 486/66 MHz processor	50 MB
Netscape Communicator	16 MB	486	20
Word 97	8 MB	486	20-60
Windows 95	8 MB	486/25 MHz	40-45 MB

**Table 2. Hardware requirements. Please See Appendix A for an explanation of computer terms used.**

Based on software requirements presented in Table 2, we determined that the minimum requirements for our computers would be a 66 MHz 486 with 16 MB of RAM and a 200 MB hard drive. We started off with one computer, a 120 MHz 486 with 8 MB of RAM and a 1 GB hard drive, donated by Literacy Parkville/Qualicum. We tested this computer with the software we intended to use and found that 8 MB of RAM was indeed inadequate for the web browsers. The computer ran very slowly and was frustrating to use. We subsequently added 32 MB of RAM and found that all of the software ran quite satisfactorily. In addition to this computer, we added a 166 MHz Pentium with a 2.1 GB hard drive and 32 MB of RAM. Both computers were also equipped with sound cards and speakers, and 28.8 KB or better modems.

There is a tendency among computer enthusiasts to choose the latest, fastest, and therefore, most expensive, computers. While the Pentium is faster to use than the 486, we would like to stress that the 486 is fully adequate. It is not necessary to purchase equipment that greatly exceeds the requirements of the software chosen. Analysing your software needs carefully before purchasing computer equipment can save a considerable amount of money

#### **4. Choosing an Internet service provider**

This section only applies if you are planning to offer Internet access. Depending on where you are, there may be many Internet service providers to choose from. Considerations in choosing an Internet service provider are:

- 1) **Local access.** Make sure that the Internet Service Provider has local dial up access. If long distance charges apply when you dial into your provider, your costs will escalate greatly.

- 2) **User/phone line ratio.** Internet Service Providers allow many users to connect to the Internet simultaneously. This is accomplished by having many phone lines that can be used at the same time. If an Internet Service Provider does not have enough phone lines for the number of users, it can be difficult to log on. A good ratio is not more than 15 users per phone line.
- 3) **Hours provided.** The number of hours provided with a given account will vary with the account type and the Internet Service Provider. We chose an account that provided 150 hours of connected time per month.
- 4) **Connection speed.** Most Internet Service Providers now provide connection to 56.6-kb modems. Make sure that the Internet Service Provider you choose supports your modem.
- 5) **Number of users.** Most Internet Service Providers have accounts that allow multiple users. Each user can log on with his or her own user name and can access a private e-mail account. Make sure that all of the users can log on at the same time.
- 6) **Storage space:** if you plan to publish a web page, you will need to have some disk space on the Internet Service Provider's hard drive.

We chose an account with a local Internet Service Provider that included 150 hours per month of on-line time, five user names and 5 MB of storage space.

Although we are not addressing the issue here, many areas have access to Cable Internet access. This can be an attractive alternative to using modems and phone lines because it is much faster, access is unlimited and there is no need to install phone lines. Call your local cable company for more information on Cable Internet access.

## **5. Choosing lab space**

The amount of space required will depend on how many computers you want to set up, and how many people will be using a computer at any given time. We set our lab up initially with two computers. We used a single long table with a computer at each end. Generally speaking, about four feet of bench space per workstation is adequate. We found that lab participants often enjoyed using the computers in groups, so extra chairs around the computers is a good idea.

*Computer labs for literacy groups*

In addition to providing adequate bench or desk space, you will need to ensure that there are enough electrical outlets in your lab to support the hardware you will be using, and that these outlets are properly grounded. A lack of grounded outlets can be a serious problem in older buildings.

Because computers produce a lot of heat while running, it is important that the room chosen for the lab is well ventilated. We discovered the importance of ventilation when the weather got hot and we found that the windows to the lab were painted shut!

A final consideration for the lab is security. Computer equipment is expensive and is often not completely covered by insurance. We installed a metal mesh on the windows of our lab, and a deadbolt on the door. The building that housed the lab already had an alarm system installed.



## **II. Using the lab**

Once the lab set up was complete, students and tutors were invited to take part in open lab sessions, which were initially held twice per week. These labs were typically attended by between one and four participants, and a facilitator.

### ***Attracting students – the fear factor.***

We have found that many while many students express an interest in learning more about computers, there is a natural intimidation factor that must be addressed. Many new computer users fear that they may do something to damage the computer. It is important to reassure students that there is nothing that they can do (within reason) that will harm the computer. In particular, some of the less friendly software error messages, such as “fatal error”, can cause panic in new users. Such errors are almost always the fault of the software, not the user!

Some students also expressed concerns that by using the Internet, they would be exposing personal information to prying eyes. These fears should not be dismissed out of hand, as concerns about security and privacy on the Internet have some basis. However, in demonstrating Internet tools to students, we generally tried to show students that sharing information on the Internet is a matter of choice.

### ***Teaching the basics.***

Our goal for students was to provide a basic level of skills and comfort with the computer. Our approach was to introduce students to the various computer components, particularly the mouse, the keyboard and the monitor, and then to general software skills. Mouse control is a very important skill for using Windows. Many students found that playing the Solitaire game that comes with Windows is a good way to learn mouse skills. We used a touch-typing program to improve students’ keyboard skills. Touch-typing turned out to be quite popular.

Once students were comfortable with the mouse, we introduced them to the basics of Windows 95. Broad outlines of basic Windows 95 and Internet skills are presented in tables three and four, below.

<b>The desktop: what are we looking at?</b> -Desktop icons -The taskbar -The start menu	<b>Entering and editing text</b> -Cut, copy and paste -Using scroll bars
<b>Starting a program</b> -Using desktop shortcuts -Using the start menu	<b>File skills</b> -Saving -Copying -Deleting
<b>Switching between programs</b> -Using the task bar	

**Table 3. Windows 95 skills.**

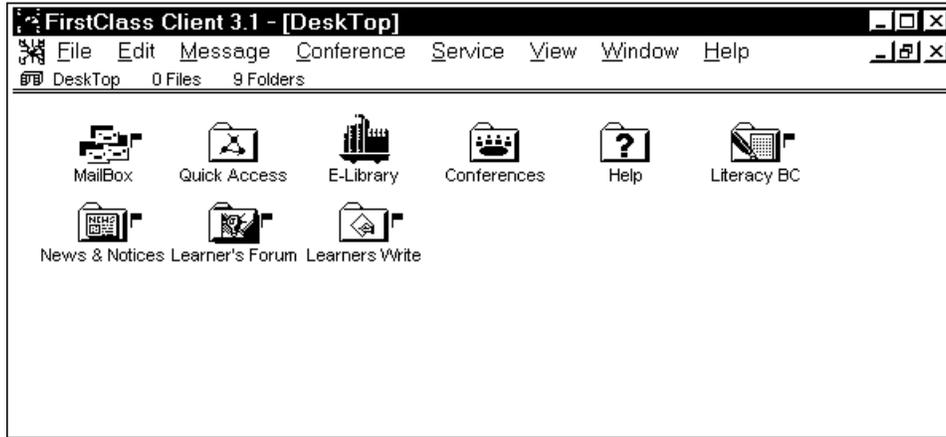
<b>Getting on to the Internet</b> -Logging on	<b>Using e-mail</b> -composing e-mail -sending and receiving e-mail -using attachments
<b>Using a web browser</b> -Entering URL addresses -Using the “Back” and “Forward” buttons -Using bookmarks -Using search engines	<b>Using the BC Literacy Network</b> -FirstClass conferencing -Posting and reading notes

**Table 4. Internet skills.**

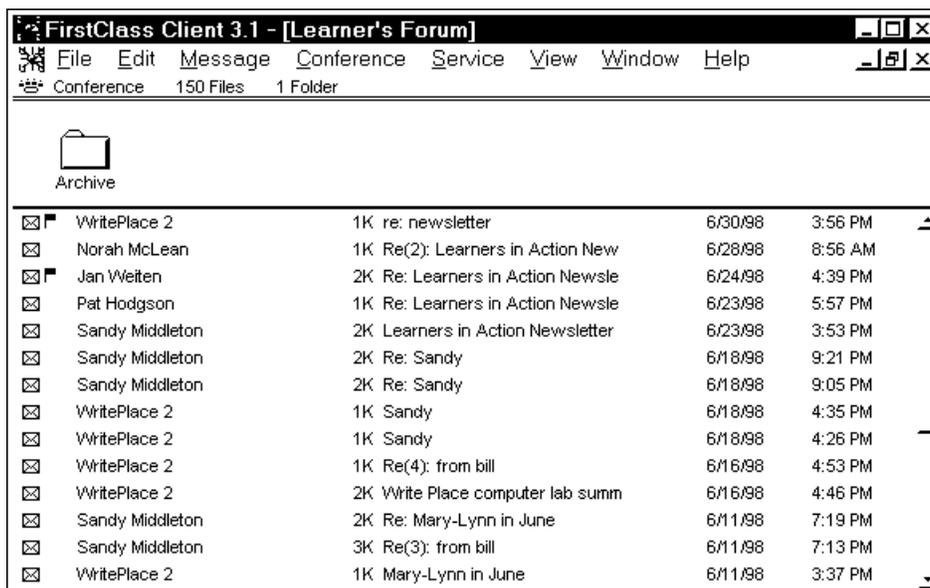
### ***Using the Literacy Network.***

The BC Literacy Network is a conferencing system hosted by Capilano College in North Vancouver. Access to the network is provided through direct dial-up lines, and through the Internet. The network is divided into conferences, or discussion groups, much like the Usenet discussion groups available on the Internet. Unlike Usenet, however, the conferences of the Literacy Network are not public. Participation in the Network requires the use of FirstClass Conferencing software, and an account provided by the network administrator. Because the conferences are not public, students can post their notes without feeling self-conscious about their writing skills. This provided a sense of security to students and encouraged them to write.

On logging in to the conference server using the FirstClass Client software, users are presented with a “desk top”, displaying different conferences as icons. An example of the desk top is shown below:



Clicking on the icon for a forum brings up a window with a list of current messages in the forum, show below. From this window, students can view the messages, and add responses or new messages. We found that students enjoyed getting responses to their messages very much. Using the Learner’s Forum served to encourage students to read and write, and has also lead to a sense of friendship and community between students here at The Write Place and elsewhere in the province.



## Appendix A: A guide computer components

Determining your hardware needs and choosing the right hardware can be intimidating. Knowing what all of the terms used to describe computers and their components is quite helpful. For that reason, we provide a brief introduction to computer components here. There are two major components to a computer: software, and hardware. Software is the programs you use, and hardware is everything else. Hardware in a typical system consists of a monitor, a keyboard, speakers, floppy disk drives, a hard drive, video card, CPU, RAM, a sound card and a modem.

**Monitor:** Considerations: Size (bigger is better), dot pitch (smaller is better), Horizontal refresh speed (faster is better).

Monitors look like TVs but aren't. Along with the keyboard and the mouse, the monitor is one of the components of the computer that you actually interact with. There are three factors to consider in choosing a monitor: size, dot pitch and horizontal refresh speed.

Monitors come in sizes ranging from 14 to 21 inches, measured on the diagonal. Larger monitors are easier to read than smaller monitors, which can be an advantage for users with poor eyesight or with limited reading skills. Unfortunately, larger monitors are also more expensive. We have found that the 15-inch size is a compromise between cost and size.

Dot pitch is the size of the pixels drawn on the screen. Typical sizes are .25 to .43 mm. The smaller the dot pitch, the sharper the image will appear. We recommend buying a monitor with a .28 mm or smaller dot pitch.

The horizontal refresh rate is a measure of how often the screen is redrawn. Rates range from 60 MHz to 82 MHz. The faster the rate, the less the screen appears to flicker. We recommend monitors that support at least 72 MHz horizontal refresh rate.

**Keyboard:** Considerations: Tactile feel, ergonomics.

All keyboards are not created equal. We recommend looking for a tactile keyboard. When you press the keys on a tactile keyboard, the key at first offers resistance and then depresses as you push harder. The keys also click when you press them. This provides feedback to the user, and can result in much faster typing. You may also wish to consider getting an ergonomic keyboard, like the Microsoft Natural Keyboard. It features a bend in the centre so that the user's hands sit at a more natural angle. This can reduce wrist strain, and resulting Carpal-Tunnel syndrome. An inexpensive wrist pad for the keyboard may also ease wrist strain.

**Mouse:** Considerations: Two buttons, three buttons.

The quality of your computer's mouse can have an impact on your enjoyment of your computer. Microsoft and Logitech mice are good bets. Most mice have two buttons; some have three. Typically, the middle button on a three-button mouse is used to simulate a left-button double-click. This can be quite helpful to beginners, who often have trouble getting the timing of double-clicks. Some mice also come with a wheel in the centre, which is used for scrolling through documents.

**Hard drive:** Considerations: Size (more is better), Access time (less is better).

The hard drive is where your computer stores programs and data when they are not being used. There are two main issues to consider in choosing a hard drive for your computer: size and access times. Size for computers is measured in megabytes (MB), or in gigabytes (GB). A gigabyte is 1000 megabytes. 486 computers typically come with hard drives ranging from 250 MB to 1 GB. New Pentium computers typically include 2 GB or larger hard drives. If you are buying a used 486, make sure it has a hard drive that is large enough for your needs.

Access times represent how long it takes your hard drive to find a particular file. Access times for hard drives range from 9 milliseconds (ms) for newer drives to 28 ms for older drives. The smaller the number, the faster your hard drive is. Increasing the access time can speed up your computer's performance.

**RAM:** Considerations: Size (MB), Access speed, number of pins.

Random access memory, or RAM, is where your computer stores programs and data while it is being used. When you load a program, a copy of the program is read from the hard drive and stored in RAM. This storage is volatile or temporary: every thing stored in RAM is lost when the computer is turned off. RAM access times are much faster than access times for hard drives, typically 60 to 70 nanoseconds (Ns). Upgrading a computer's RAM often results in a greater increase in system speed than upgrading the CPU. RAM usually comes on little plug-in computer cards with either three or nine computer chips. These cards are called Single in-line memory modules, or SIMMs. SIMMs are classified by how many gold connectors, or pins, they have, and by how much memory they contain. Older 486's use 30 pin RAM, and new 486's and Pentiums use 72 pin RAM. If you are going to upgrade your computer's RAM, make sure that you get SIMMs that are compatible with your system. 30 pin RAM SIMMs come in 1 MB and 4 MB sizes. 72 pin RAM SIMMs come in 8, 16 and 32 MB sizes. There is a new type of RAM

that you may come across, called dual inline memory modules, or DIMMs. DIMMs come in sizes of 64 or 128 MB.

**Floppy drive:** Considerations: size, format.

Floppy disks are removable storage media. Floppy drives are the devices that read them. Floppy disks come in two sizes, 5.25", and 3.5". Newer computers generally only use the 3.5-inch drives. The amount of data a floppy holds depends on the format, which can be either high density or low density. High density 3.5" disks hold up to 1.44 MB of data, while high density 5.25" drives hold up to 1.2 MB of data. Low-density disks hold half the data that high density disks hold. Occasionally you will encounter floppy disks that hold more than 1.44-MB of data, but these are not common.

**Modem:** Considerations: Speed, internal vs. External.

If you are going to use dial-up access to an Internet Service Provider, you will need a modem. Two considerations in choosing a modem are external vs. internal, and modem speed. External modems are little boxes that plug into your serial port and sit beside your computer. Internal modems are computer cards that go inside your computer. External modems have two advantages: they have lights on them to tell you what they are doing; and they can be reset without restarting the computer. The disadvantage of external modems is that they are much more expensive than internal modems.

Modems come in a variety of speeds measured in baud rate. A baud of 1 indicates the transmission of one bit per second. Most modems sold today come in speeds of 28.8, 33.3 or 56.6 kilo-baud. The price of the 56.6-kb modems has declined substantially lately, so it really makes no sense to get anything less.

One more consideration in choosing a modem is compatibility with your Internet service provider's modems. Make sure you get a modem approved by your Internet Service Provider.

**Video card:** Considerations: Number of colours supported, screen resolution, video RAM.

Screen resolution refers to how many pixels, or "dots", your screen can display. More is better. All video cards available today support resolutions of 640 pixels wide by 480 high, 800 by 600, and 1024 by 768. A good resolution for a 15" monitor is 800 X 600. The number of colours your video card can display at any given resolution will depend on the amount of RAM your video card has. (Note that video ram has nothing to do with the RAM that your computer uses to work with programs and data). In practice, a video card with 1 MB of RAM is usually adequate.

**CPU:** Considerations: type (higher number is better), speed (more is better).

The CPU, or Central Processing Unit, is the brain of your computer. When you hear that a computer is a 286, 386, 486 or Pentium, you are really hearing about what kind of CPU the computer has. The speed of CPUs, called the Clock Speed, is measured in megahertz, (MHz), or cycles per seconds. The overall speed of a CPU depends on more than the raw clock speed, however. A Pentium running at 100 MHz is faster than a 486 running at 100 MHz, because it can do more calculations in each clock cycle. The same is true of a 486 compared to a 386.

**Sound card:**

To hear sound on your computer, you will need a sound card. This is a special circuit board that goes inside your computer. External speakers plug into the sound card.

**Mother board:**

The motherboard is the main circuit board inside your computer. All the other chips and circuit boards plug into your motherboard.