

PSYCH

ONLINE

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PSYCH ONLINE

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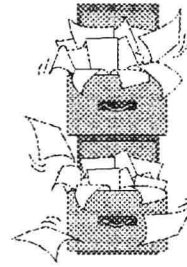
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Introducing Psych Online

For students of psychology, and that includes all of us involved in this wide-ranging field, working with online and computer-based resources has evolved into bursting file cabinets and a low-tech mound of scribbled notes. Unlike the journal literature, which is nicely organized and electronically searchable in databases, or the psychology-related books – also easily located with library catalogs – the enormous volume of online and computer-based material is more difficult to probe. Cataloging systems are still primitive, if they exist at all. Although keyword searches are possible for some of the material, the searches often turn up a bewildering volume of sites with or without titles. Information about important resources is often passed around by word of mouth or its electronic equivalent. Though the medium is faster, the process itself is not that different from what our ancestors did centuries ago before organizing and cataloging systems were standardized.

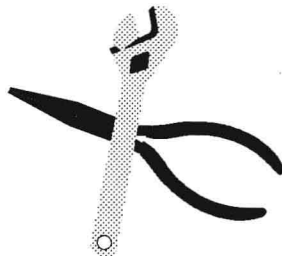


These resources are rapidly becoming the most important ones for psychology students, faculty, researchers, and practitioners. To get your arms around what is out there, to find the resources you need without endless hours of surfing and experimentation, and to have some context to evaluate new resources, you need a guidebook. *Psych Online* is a compendium of online and computer-based resources to help you understand the scope of these immensely useful materials and decide which ones you want to explore.

What Will *Psych Online* Do for You?

Provide Quick Tips and Tools

Psych Online includes a brief overview of the most important categories of resources and tips on how to use them.



Instructions are kept to a minimum. This book is not an introduction to the Internet or a manual on using your computer. You can get this kind of information in many other places if you need it.

Provide a Psychology-Oriented Context

Psych Online isn't an alphabetical list of every resource out there, nor is that the goal. With new resources emerging daily and older ones (or even brand new ones) disappearing into the ether, a comprehensive list would be impossible and not even desirable. Instead, the goal of *Psych Online* is to highlight a large range of resources, point out which ones are extremely useful, and place them all into a context appropriate for the discipline of psychology – one that emphasizes the interests of people



searching for resources rather than the type of resource. For example, if you're involved with social psychology as a student, faculty member, or researcher, you're interested in resources of any kind that relate to your field. It won't matter if you can get to them via the Web, an e-mail to the author, an automated subscription to a mailing list, or an anonymous ftp, just as it doesn't matter if written material is obtained from a journal or textbook. With *Psych Online*, you can form a large framework for the kinds of resources available in several goal-oriented categories and when new ones come to your attention you have a context in which to evaluate them.

See the Big Picture

Though you may be a veteran on the use of some of these resources, you may not be aware of the big picture. Most people's knowledge of what is out there is spotty and uneven because so much information is distributed informally. You might, for example, hear about a great mailing list through the grapevine, join it, and then spend many hours reading all the e-mail. But you might not learn about many other discussion forums on similar subjects, one of which might suit your needs far better.

Save Time

Those of you who surf the Net, join discussion forums, or download software know that these resources can be a time-sink of gargantuan proportions. For example, exploring the World Wide Web with a modem is great fun – for a while – but every graphics-filled page can take an irritatingly long time to download. You can't just browse the Web the way you can browse a bookshelf. You can't thumb through a Web site the way you can thumb through a book to see if it meets your needs. We are now



well past the stage at which we can afford to just wander around, delighting if we find something interesting. The electronic tools are becoming more familiar so we don't need to dwell on computer-related details, as fascinating as these may be. We need to get some work done.

Lead You to a Variety of Resources in Psychology

The resources in this guidebook come from many different sources and fall into several categories. Many are Web sites with special relevance to psychology. A large number of entries describe software products from companies, universities, or individuals who will share their work with their colleagues. The range of software runs the gamut from the multimedia CD-ROMs to older DOS and Macintosh programs that still run well on modern computers and still contribute something useful to the pool of resources, despite their less flashy interfaces. Some important entries describe the major computer-based and online library resources for psychology, which have grown considerably since the first *Psych Online* was published in 1997. A great many mailing lists and newsgroups are listed as well, and people involved in psychology have made much use of the online discussion to hold debates, share ideas, and keep in touch. *Psych Online* includes information on how you can access or obtain everything listed.

Explore Resources from Anywhere in the World

The online world makes it possible to communicate with people all over the planet and learn what is happening in psychology in many different countries. It also enables us to draw from a global pool of resources. With e-mail, you can contact a faculty member or student on the other side of the planet as easily as one across the campus to learn more about the software

they're developing. On the Web, of course, you sometimes don't even know the geographic location of the site; the constraint of distance on our ability to take advantage of psychology-related resources has, for all practical purposes, vanished.

Learn About the People Who Develop Computer-Based and Online Resources

In the traditional world of publishing, becoming an author is an arduous process. However, almost anyone can develop Web sites, shareware, and discussion groups and offer them to the entire world, virtually overnight. It's a very democratic environment, and psychology students have been especially creative players. *Psych Online* includes interviews with some of the people who have contributed to this high-tech arena.

Reflect on the Psychology of the Electronically Mediated World

This frontier is a treasure-trove of material for innovative psychological research. The social psychology of electronic discussion forums, for example, is a fascinating subject in its own right. *Psych Online* highlights some of the ways human behavior is changing because of the new media, and some of the resources listed deal directly with the topic.

Identify the Gaps

Computer-based and online resources in psychology are spotty in coverage. Some areas have far more material than others, and this guide will help you see where the gaps are. If you are developing resources yourself, you'll be able to see where you can make a contribution.

The Organization of *Psych Online*

Organizing the resources in *Psych Online* is not an easy or straightforward task, given their range and the breadth that so many of them show. A Web site with pointers to hundreds of other locations and a variety of discussion forums can be very hard to categorize, particularly when it is evolving rapidly and adding new resources all the time. A discussion group can change its focus quickly, depending on who is participating. A purely subject-oriented organization based on the subspecialties of psychology would not work well.

Instead, *Psych Online* adopts a goal-oriented organization, one that is more suited to the needs of the people in this field. This approach recognizes that students, faculty, researchers, practitioners, and people in need of support have overlapping but somewhat different goals when they are searching for resources. Although two discussion groups might deal with addictions, for example, one may have a research-oriented focus and the other may be a recovery support group. Content and even membership might overlap, since addicts are interested in the research and students and researchers are interested in the personal experiences of addicts. However, the orientations of the two groups highlight different goals of the participants. Instead of grouping these together under a single subject heading, I put them in separate sections.

Librarians are debating how to organize and categorize material of this kind, but this approach should help you understand the orientation of the resources as well as their subject matter.

The book begins with quick tips on how to use the many resources in the book, but the general assumption is that many of you already know how to use most of them and just need a few reminders, procedures, and definitions. In any case, this kind of information is available through many other sources,

particularly the manuals that accompany your computer and software.

The second chapter includes a glossary for reference, and it covers the icons used in this book to identify the type of resource. These will help you recognize at a glance whether the resource is a Web site, a gopher site, a software program, a lively or sleepy discussion group, a resource loaded with text material, or any of a number of other categories. A special symbol, the POL-STAR, is used to draw your attention to very valuable resources that will be useful to the whole psychological community.

Chapter 3 covers the megasites in psychology, including the giant databases and library resources. Chapter 4 lists the resources that are primarily for students and faculty, particularly at the introductory level. Chapter 5 explores more specialized resources within psychology, and these are grouped by discipline. Many of these resources are also for teaching and learning, especially in more advanced classes dealing with neuroscience, sensation and perception, cognition, social psychology, or other academic areas.

Chapter 6 lists resources in abnormal psychology, clinical psychology, counseling, and other areas related to mental health. People in practice or students leaning toward this area in psychology will want to explore these extensive resources directed toward researchers, students, teachers, practitioners, and people who are suffering from various behavioral disorders and need support. The chapter also includes a number of self-help resources.

The previous edition of *Psych Online* included a final chapter on the proprietary services, such as American Online and Prodigy, whose special content is accessible only to account holders. Some have some specialized material pertinent to *Psych Online*, but, since so many more psychology-related resources are now openly available on

the Internet, this chapter was omitted for the current edition.

A Word About Shifting Sands

Anyone familiar with some of the resources in this book knows that the rate at which materials come and go is alarming. Quite a few that were listed in the first edition of *Psych Online* have been dropped because they are no longer available. Valuable resources you stumble upon after an agonizingly slow search and many dead ends may disappear or move to a different host just after you enthusiastically inform all your classmates or colleagues about them. There is no parallel to this in the arena of the printed word or the commercially produced video. This guidebook is not quite the same as a list of suggested readings or a catalog of psychology-related videos. Those list-makers can be reasonably certain that the resource will still be there a year or two from now, even if the book goes out of print or the video is no longer available commercially.

The reasons for the volatility are many and varied. A shareware author may decide not to share the software any longer, or the program may have been developed for an obsolete computer platform or programming environment. A student-Webmaster may head to graduate school after erasing the files in the directory. Mailing lists and newsgroups evolve and change over time, and many become extinct. A formerly very lively asynchronous discussion may just die out from lack of participation, even though a review may show that many people are still subscribed to it. A surprise post to a long-dead discussion group often triggers remarks such as, "Wow, I didn't even know I was still on this list."

Lists of resources available on the Internet can, in principle, be easily updated to reflect such changes. But this kind of checking and rechecking takes considerable work, and many

online lists and catalogs contain references to resources that simply don't exist any longer, or that are so old their creators would be shocked to hear from an interested party. For the first edition of *Psych Online*, I sent out hundreds of snail mail and electronic queries to people and organizations all over the world about psychology-related resources I'd seen online, and the number that were returned with "address unknown" was astonishing. One software author, Barney Beins of Ithaca College, replied with amusement that I was the first person in several years to inquire about his programs and that either the programs were extinct or he must be. For this second edition, researcher Caroline McKeldin and I rechecked every entry and were not very surprised to see how many disappeared from the map.

Despite the volatility of many electronic resources, some stability is emerging. Although a Web site created by a student for a class may disappear tomorrow, sites such as PsychNet and Coombsweb will not. The environment will continue to be a world of shifting sands, but the megasites and super-resources will be here for some time because they fill our need for important psychology-related materials. Just as the printed version of *Psychological Abstracts* evolved into the electronically searchable *PsycINFO*, the most important computer-based and online psychology-related resources will continue to grow and adapt as computer platforms change, greater bandwidths become available, and the capabilities of our electronic tools increase.

Several Words of Thanks

For this edition, I especially want to thank Caroline McKeldin, who worked tirelessly as a researcher on this project, contacting all the sources and adding her

own brand of warmth and wit to many entries and boxes. She is a psychology graduate and author of the humorously eccentric books called *Japanese Jive* and *New York Smells*. (The latter is a scratch and sniff collection of postcards that feature unique aromas from the Big Apple.)

We both owe a great deal of thanks to the hundreds of people who responded to queries with information about the resources they had to offer. Many of those who replied are not commercial software developers or professional Webmasters. They are students, faculty, and others involved in psychology who have something useful to share, often at their own expense. When you contact any of the people listed in this book, please recognize that many of them may be offering a particular service or resource to the psychological community on a collegial basis. Most mailing list owners, for example, are not paid extra for their hard work, and they appreciate your patience when technical problems arise that they can't solve immediately. Many software developers write programs to use in their own classes but are pleased to share their work with others who might find it useful. They may not be able to provide much technical support, and they may ask for a small payment to cover expenses or a shareware fee.

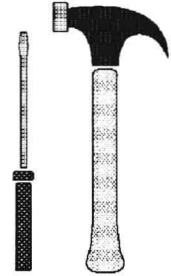
To the hundreds of people from all over the world who responded to our queries and sent packets of information, demo disks, CD-ROMs, instructions, and words of advice, many, many thanks – not just from me, but on behalf of the people who read *Psych Online* who may contact you to learn more about the exciting work you're doing to add innovative, high-tech resources to the world of psychology. Keep up the excellent work.

2

Tips and Tools

To take advantage of the resources in this book and feel comfortable when new ones come to your attention, you need a workstation with certain features; some software and software skills; and access to cyberspace, specifically, the Internet and World Wide Web.

This chapter is not intended to make you an instant UNIX guru, a telecom technician, or an Internet trainer. You're probably more interested in psychology than you are in the details of file transfers and terminal emulation, anyway. Fortunately, people need far less expertise in computer science now than they did in the early days of the Internet or microcomputers. The technology is maturing, but it still isn't quite as simple as pressing the PLAY button on your VCR. This chapter provides the essential information, an overview of the tools you'll be using, and a review of the common jargon. If you are already a high-tech wizard, hanging ten on your Web surfboard, go on to the next chapter.



The Workstation

The resources in *Psych Online* require a workstation equipped with a microcomputer, a printer, and several software packages. You will also need a connection to the rest of the world, either through a modem and a telephone line, or a direct connection. And, finally, you'll need a host computer account with your college or university, an Internet Service Provider (ISP), or some proprietary online service that provides its own content as well as access to the Internet.

The microcomputer is the brain and heart of your workstation, and the features it includes determine, to a large extent, what you will be able to do. The most important components are the processor, the disk drive, the memory, and the monitor.

The central processing unit (CPU) is the actual brain of the computer and determines how fast it can process

information. The two most important features to notice about the CPU is the type of processor, such as the Pentium or Pentium II processor used in Intel machines, and the clock speed of the processor. For example, a Pentium might be offered in a number of versions with different clock speeds, measured in megahertz. In a computer ad, usually the very first description for the model will identify the level of the processor and its clock speed. For example, "333-Pentium II" indicates the type of processor and that the machine runs at 333 MHz; an older, used model described as 486-66 indicates a 486 processor (forerunner of the Pentium) running at 66 MHz. These two features contribute substantially to the increasing cost of the computer at different levels.

RAM

The amount of random access memory (RAM) in a microcomputer is an extremely important variable in its overall performance, though many people pay little attention to this component when they purchase a new computer. RAM functions like short-term memory or working storage. For example, when you start working on a very long word-processed document, the amount of RAM will determine how much of that document you can access immediately and how much must remain on the disk in permanent storage. While human short-term storage is usually measured in "chunks," the capacity of RAM is measured in megabytes (MB, millions of bytes) and is usually expandable. One byte represents eight bits of information and holds the code for a single typewritten character such as an A, a comma, or a hyphen. A computer with 8 MB of RAM, for example, could hold the equivalent of about eight million characters of information, though much of it is needed for information other than your actual document.

Modern software requires considerable RAM to operate, particularly if you are trying to use more than one

software package at the same time. The message "Insufficient memory" is a frequent sight on modern computers, meaning that the user will have to close some applications to make more RAM available.

Earlier models of computers measured their RAM in kilobytes, or 1000s of bytes. For example, the 286s usually came equipped with 640 KB of RAM. Today, a computer with 4 MB of RAM is considered very low-end. For the last edition, I recommended at least 16MB, but now 32 to 64MB is very common, and much needed to run modern software at a reasonable pace. Though prices have dropped, memory is still not inexpensive, and it is one of those options many people forego because they can't see its value in the store. Human short-term memory, at least according to the classic experiments by Miller, is limited to 7 chunks, plus or minus 2. Fortunately, if you find you don't have enough working storage in your computer you can usually add it later. (Too bad we can't add RAM to the brain.)

Hard Disk Drive

The most important permanent storage area for information is the hard disk drive, whose capacity is also measured in megabytes or gigabytes (GB, trillions of bytes). The first hard drives for



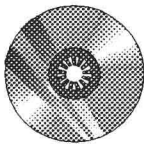
microcomputers held from 10 to 20 MB of information. This seems pitifully small by today's standards -- already into the gigabyte range. The lesson here is that the need for hard drive space grows much faster than you expect. Modern software, also known as "bloatware," will rapidly gobble up your hard drive space. Although you can conserve disk space by storing infrequently used programs and data on floppy diskettes or tapes or by using software that compresses your data

into smaller files, you will find that your hard disk fills up surprisingly quickly. If you are buying a computer now, you should consider at least 4 GB of hard disk storage. If you will be downloading large data sets, videoclips, or sound files, you will need far more. A short videoclip could occupy many millions of bytes.

Floppy Drive

Floppy drives for microcomputers come in two main sizes: 5 1/4 inch and 3 1/2 inch.

The drives accommodate diskettes of different sizes. The 3 1/2 inch floppy drive has become standard on all computers now, but, because many people have data stored on the larger 5 1/4 inch diskettes, manufacturers generally provide the ability to add that drive to the system. The 5 1/4-inch diskette holds about 1.2 MB of data, while the 3 1/2-inch diskette holds 1.44 MB. Because backups are so important, and the floppies don't hold much data even when you compress it with a backup utility, many people add a device to their workstation that supports removable hard drives (zip drives). With this, you can back up critical data onto hard disk cartridges that hold far more data than a floppy. Another backup option is to add a tape drive to your system.



Monitor

The monitor is the display device that you will be viewing for hours. Many manufacturers attempt to keep their prices low by including poorer-quality monitors with their systems, so it is wise to actually "test drive" a system, with the actual monitor it comes with,



before buying. You might save some money if you buy a monochrome monitor, but you won't be happy with it. Virtually all modern computer monitors are color and vary in size from about 15 inches (diagonal) to 21 inches. If you like to keep three or four applications open at the same time, you should consider a larger monitor.

CD-ROM/DVD-ROM Drives and Multimedia

The CD-ROM drive enables the computer to access data stored on CD-ROM platters, which hold about 650 MB of information. This is equivalent to about 450 3 1/2-inch diskettes. Almost all CD-ROM drives sold with microcomputers are read-only, and you can't save any of your own information to the shiny platters the way you can on your hard drive or floppy diskettes. For example, if you want to download a videoclip from the World Wide Web, you can't save it to your CD-ROM disk. The file will probably be too big for a floppy disk, so you'll have to save it to your hard drive, thus eating up more of your most precious storage compartment. People who really love to save these large files may want to buy a special type of recordable CD-ROM drive that allows them to write data to blank platters, and then use them in regular CD-ROM drives.

The ability to concentrate so much information in an inexpensive format has made it possible to store videos, sound files, huge amounts of text, and other byte-hungry applications and make them available to the microcomputer. Without the CD-ROM, it would not be feasible to create and market large data sets or multimedia applications at reasonable prices. Even very brief videos and audio files take up huge amounts of storage space, and the amount of data needed for many bibliographic applications is also too massive to distribute on floppies.

Emerging now is the DVD-ROM, a newer technology that will supplant the CD-ROM because it enables the platters to hold 4.7 GB of data -- quite an improvement over the current 650 MB. The second generation of these drives (DVD-2) can read all the older CDs, including the ones that are created with CD recorders, and audio CDs. The vast amount of storage space on these platters will allow developers to embed multimedia elements, interactive games, gargantuan databases, and even full-length movies.

In addition to the CD-ROM and the DVD-ROM drive, a multimedia microcomputer requires a sound system and speakers. These come standard on Macintosh computers and are widely available on IBM-compatible systems. The speakers that come with multimedia computers are often poorer quality, though sufficient for most applications. If you don't mind the less than perfect sound quality, you can play your audio CDs on your computer and listen to music while you work. However, an audio CD player can't read the platters used in computers.

The Software

The software industry is trying to convince us that we should buy more and more packages and upgrade constantly to add functionality that will enable us to do things we never planned on doing anyway. This approach helps the hardware industry because bloatware requires more hard disk space, more memory, faster processors, and higher-resolution monitors.

For the psychology-related resources in this book, you will not need expensive software. You will need to be able to use some of the most common software packages, some of which are free. The

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following are the most important software tools and skills you'll need.

Graphical Web Browser

You will need browser software such as Netscape Navigator or Internet Explorer to access the Web sites in this book. Current versions of these programs are widely available through a multitude of sources, including online, for free. Keep in mind that these programs have grown quite large, so a download via modem could take many hours. A very useful feature of browser software is the ability to save the address of a Web site you are visiting, while you are visiting it. These are called bookmarks in Navigator and favorites in Explorer, and they can be organized according to topic. The next time you wish to visit that site, you can go directly to your list rather than conduct a tedious search with keywords.



Word Processor

Most people consider the word processor to be the single most useful piece of software they own. These programs are so loaded with features that the user's guide can be hundreds of pages long. You probably never use most of these features, but, for the purposes of this book, you may need to know something about how to use your word processor to handle files in ASCII (pronounced ASK-ee) format. This is particularly true if you will be dealing with downloaded statistical files.

Save and retrieve commands of a word processor ordinarily handle binary files stored in the format your word processor can decipher, complete with hidden codes for boldface, subscripts, and other formatting features. These files can usually be read by other word processors if they have the right conversion utility, but you will run into occasions when you need to read, save,

or otherwise manipulate a “plain vanilla” version of a document.

The plain vanilla version of a word-processed file is called ASCII, and your word processor will have a means of saving and retrieving text in this standard coding format. In Microsoft Word, for example, the ASCII version is called a “text file.” If you want to view a data file that you downloaded from the Internet, you should retrieve it in its plain vanilla version rather than allowing your software to convert it, and you should also save it again that way.

File Management Skills

You will need to know how to move around and examine the files on your computer’s disk drives, create directories, remove them, and run programs. Many software programs in *Psych Online* are not commercial products with slick installation routines and user-friendly manuals, but their psychology content could be just what you need. To take advantage of these resources, particularly if you are accustomed to being insulated from the computer’s operating system by Macintosh or Windows and you’ve only installed commercial products that handle all the details, you will need to learn the basics of file management. Higher-order file management skills are particularly important to keep your hard drive organized and to avoid chaos in computing when you are exploring shareware, freeware, or demos. If you don’t plan ahead, you’ll wind up cluttering your hard drive with hundreds of files you’re afraid to delete because you can’t remember what they do.

E-mail Software

To join mailing lists and communicate with your friends and colleagues via the Internet, you will need e-mail software. Some e-mail software is integrated with the browser (e.g., Netscape Mail), while others are

standalone products.

An especially valuable feature of most e-mail software is the ability to automatically filter incoming mail. If you join an especially active mailing list, for example, you may want to set your software to automatically file mail from that list to a special folder so it doesn’t clutter your inbox. Then, when you have time, you can go to the folder and read several days’ worth of discussion.

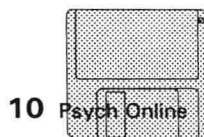
A number of companies are offering free Web-based e-mail accounts as a way to bring visitors to their Web sites. The advertisers who display ads on those sites are paying for these services. Examples include AltaVista from Digital (<http://altavista.digital.com>) and Microsoft’s Hotmail service (<http://www.hotmail.com>). One advantage to these services is the ability to check your mail from any workstation on campus that has Web access without having to configure any specialized e-mail software.

Virus Protection Software

Downloading software from the Internet, from bulletin boards, or from online services makes you vulnerable to viruses. Before running any software you obtain from such sources, you should scan it for viruses. You should be particularly careful about this and include it in your automatic routine when you start your computer each day if you’re lazy about backing up your files.

Decompression Software

Freeware and shareware available for downloading from online sources are often compressed so that they consume less storage space and can be transmitted across telecommunications lines more quickly. Once you have the compressed file on your hard disk, however, you will need to decompress it before it will work. If the software is relatively new, you may only have to click on the file you just downloaded, and the installation program will automatically do



all the work for you. However, some resources in this book were created before those installation routines were widely available, so you may need to know how to decompress the file.

Most Intel-based microcomputer software can be decompressed with a program called pkunzip.exe. Macintosh users typically use a program called Stuffit to decompress. Pkunzip.exe can be downloaded from many sites for free. On the Web, do a search for pkunzip.exe and you will find the closest downloading sites. If you already have an older version of pkunzip.exe, download the newest version if you have difficulty unzipping any software.

Connecting to the World

To connect your workstation to other computers down the street or around the world, you will need a modem and telephone line or a direct connection of some kind.

The modem, which you will probably be using from your home, converts the analog signals carried by the telephone lines to the digital signals required by the computer when you are receiving information. When you are sending, the modem does the digital to analog conversion. When a phone number is dialed, your computer's modem starts a handshaking process with a modem at the host computer to negotiate the connection and begin exchanging information. Universities often have banks of modems accessible through the same number so, when you call the university, your call will be directed to the next available modem. A modem can be installed as an internal device in the microcomputer, or it could be an external device connected to the microcomputer with a cable.

One of the most important features of the connection you make to other computers is the speed of the connection, which is measured in bits per second (bp/s) and which is dependent on your modem's capabilities

(and those of the modem you call), not the speed or power of your computer. Modem speeds have increased in jumps over the years as data compression techniques have improved. Many modems in use today support 33.6 kb/s (kilobits per second) or higher, and, if you are buying a new one, I recommend the 56 kb/s variety, since you will be spending much time online. You may sometimes hear the words "baud rate" to refer to modem speeds, but this measurement scheme is correctly applied only to the slower, earlier modems, though you may still see it used in older communications software when you try to configure the parameters for a connection. If you have a 56 kbp/s modem but are connecting to a host with modem banks that support only 33.6 kbp/s, your modem will "step down" to the slower speed. Although you will usually want to establish the fastest connection you can, there may be times when you want to force the modem to use a slower speed by configuring your communications software. When the telephone line connection is noisy (or "dirty"), slower speeds may actually work better.

Increasingly, more and more options to connect from your home are becoming available. For example, the cable companies are implementing Internet services in some locations so you can connect using the coax cable they installed in your home for your television, rather than over the telephone lines.

Another option for higher speed connectivity is ISDN (Integrated Services Digital Network), offered in most locations through the telephone companies. You will need an ISDN adapter for your computer, ISDN service from your carrier, and an ISDN account with your Internet Service Provider. The ISDN service allows you to connect at maximum speeds of 128 kb/s.

Larger organizations, such as your college or university, usually have direct connections to the Internet that provide access to all the computers on