

Becoming User Friendly:

The technological hurdle of modern America

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#### Introduction

Since the computer's inception in the middle of the twentieth century, it has continued to have an indelible impact on world history. With the birth of the personal computer industry in the 1980's, computers became a mass-produced commodity that could be used by anyone with a little bit of technical savvy. Today computers are synonymous with the way we conduct business and live our lives. With a higher concentration of worldwide computer usage, more and more personal information is being stored on hard drives and transmitted over the internet. While technology has continued to forge ahead, many people have gotten left behind amidst the continued forward march of progress. These people often do not understand the full implications of how important it is to protect personal information from hackers and identity thieves. Ignorance of how to use computers, and what to do in order to minimize the intrusion of unwanted spyware and viruses, are the most common denominators in allowing criminals to take advantage of well-meaning, hard-working Americans. Many of the successful crimes committed against novice users take place because of a virtual window left open or a door not closed. It is worth examining the issues many people have with not only understanding computers, but also with learning how to use them so that they will be better equipped to protect their selves from unscrupulous persons. I have taken the time to speak with many people who I know from many different walks of life in order to gain a clearer idea of what the most common problems are that plague newer users, regardless of the age of the person. With this information in hand, possible solutions to many of the problems are identified and presented for consideration.

### Technology and the new economy

No invention in the recorded history of man has had the same impact as the personal computer (PC). The silicon chip is probably the most important technological development of the last century (Peck, 1990, p. 45). It is no secret that computers dominate the landscape of the modern American economy. In this day and age, a person must at least have a basic working knowledge of how to use a computer if they are to survive in most job markets. The interaction between humans and computers is strongly influenced by technological, organizational, and socioeconomic factors (Bullinger, 2002, p. 2). These factors have combined to forge a society that is dependent on instantaneous information. Many older workers have been reluctant to embrace the societal changes that have come with the Information Age. The generational gap that is becoming more persistent every year as technology advances has only accelerated its growth and shows no apparent signs of slowing down. If older users are to adjust to the ever-changing landscape around them, they must be able to learn how to use the new tools of the trade and apply those skills effectively.

One of the ironies of the technology gap is that older people are not the only ones who get left behind; there are also many younger workers who have had very little exposure to computers even though most of their generation grew up with the machines. More effort needs to be made by the computer industry to embrace Americans who are not as familiar with technology. In this industry, it is commonplace for products to go through a usability evaluation prior to their public release (Cordes, 2001, p. 1). But even with this measure in place, the design process is anything but a series of well-defined decisions (Hammond, 2005, p. 147). Form does not always follow function in the way in which it should. It is worth examining common issues users have with understanding computers so that effective changes can be made.

### Attitude and acclimation

Since the time that I first entered the workforce, I have had the opportunity to work with some people who knew little to nothing about computers. I have also been responsible for training some of these people in tasks that were necessary for their jobs. I will relate two of the most memorable experiences from my career as they are prime examples of how difficult a hurdle technology is for some people to overcome. In both of these examples it is the attitude that the users involved take towards learning technology that has the greatest impact on their success or failure.

In one of the first jobs I had out of high school, I worked in a temporary “co-op” position at a manufacturing plant. I was responsible for using a desktop publishing program called CorelDraw 5 to develop visual aids for engineers and training materials for plant floor personnel. I spent the first week on the job becoming acclimated with the program. In the weeks that followed, I developed documents using the computer and an early Kodak digital camera. I was eventually charged with training two ladies who we shall call Debbie and Sarah. The ladies had worked on an assembly line, and were going to take over my responsibilities once my temporary position expired. Debbie and Sarah were very unfamiliar with computers but were able to learn what I had to teach them fairly quickly. I focused on teaching them things there were essential to their jobs, and did not spend too much time on things they could eventually learn on their own. By the time I finished training the ladies they had become very proficient at using the camera to take pictures, importing the pictures onto the computer’s hard drive, and then using CorelDraw to design documentation. Although Debbie and Sarah were ignorant of most things relating to computers, their attitudes toward learning new things enabled them to adapt to the technology in such a way that they were able to use it productively by the time I finished training them.

I work as an engineer for BellSouth, and when I worked in Charlotte, NC, I worked with a gentleman who I will refer to as Jamie. Jamie had worked in cable repair for many years and retired from BellSouth, but had decided to come back to work for the company as a contract engineer, thus being able to collect his pension while still making a living from the extensive knowledge he had acquired over many years of service. As knowledgeable as Jamie was about the physical telephone network, he knew very little about computers, and by this time computers had become an integral part of the job of any engineer. Engineers are required to access many computer programs, as well as draft their own designs using the CAD program Microstation (Figure 1.1).

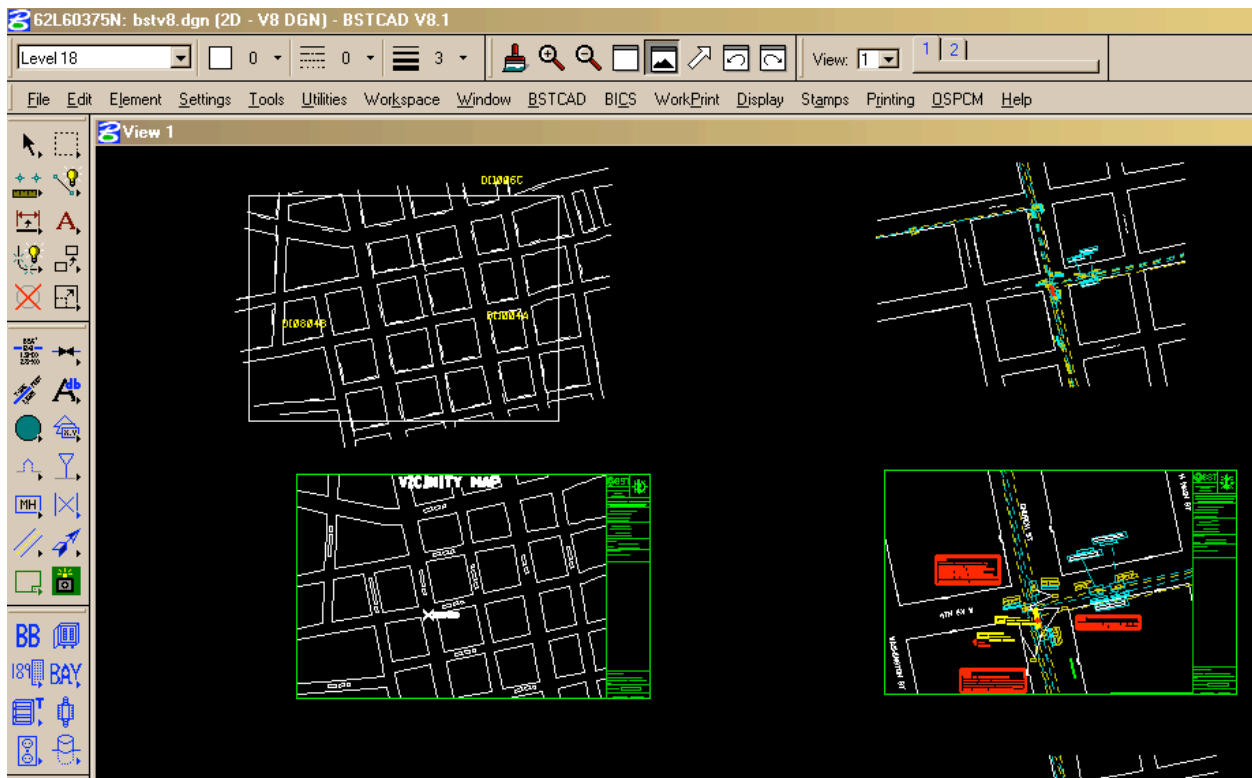


Figure 1.1 Example of the main work area from CAD program Microstation.

Jamie flat refused to learn how to use the computer or Microstation. Fortunately for him, for a period of time I and a few other younger employees were available to draft his jobs for him

using the field notes he provided us. The engineering manager eventually decided to compel Jamie to learn to draft his own jobs. I was the person given the task of training Jamie on basic computer usage. I had worked with Jamie for a few months by this time, and while I had a decent working relationship with him, this did not in anyway lessen his aversion to learning about a computer. Slowly and carefully I helped Jamie through the process of turning his computer on, logging into the system, and accessing the drafting program. While these tasks were very elementary to me, for Jamie it took a very concerted effort. Once Jamie was in Microstation, it took the better part of two hours to help him to draft a simple job to replace a broken telephone pole. The drawing was very simple and included only a few symbols showing the street intersections, pole replacement, and other details necessary for the construction crews. This same task would have taken me about 20 minutes. When Jamie was finished, he hurriedly exited the computer system and reluctantly showed his finished handiwork to the manager as proof that he had done something towards learning how to use the computer. This was the last time Jamie ever used a computer during the time that I worked with him. Jamie's poor attitude was his ultimate undoing when it came to using computers.

As the internet has grown in both practicality and potential, more people have been able to pursue their higher education goals through distance learning. Recent advances in computers and in telecommunications have created revolutions in this field (Cunningham, 1997, p. 140). Distance learning does help some people become more familiar with computers, but a person who is not able to become accustomed to this type of environment will not be able to benefit from this type of learning. In both of the former examples, the attitudes of the people involved affected the outcome of their ability to understand technology. The same can be said of distance education as a person's frustration level can wreck havoc with their concentration level.

### The top ten questions

In evaluating ways in which to address many of the challenges people face while adapting to technology, I decided to include questions actually posed by real people who have real issues with learning how to utilize computers. I approached family members, friends, and other people who I knew would give me truthful information. The questions are being included on condition of anonymity of the sources, and are worded as they were given to me. I have included the top ten questions that I believe cover the broadest range of common issues among all of the users polled. The answers reflect what is already being done by industry to make computers more accessible to a wider range of users, or the lack thereof, and includes suggestions to improve computer accessibility.

*Question 1: How do I properly save material to a computer, aside from just using the hard drive to save my information?*

Most of the users seemed to understand the concept of saving information to the computer's hard drive but had a very difficult time with the concepts of floppy disks, compact disks, and newer storage mediums such as USB flash drives. Although the different types of drives can be accessed via the "my computer" icon on most Windows computers, it does not always occur to users where the drives can be found or how they can be accessed. The Macintosh (Mac) platform has a better way of making the drives visible to users by showing the hard drive icons right on the desktop; when a new storage device such as a flash drive is available, it will also show up on the desktop, and will disappear when it is removed. Many people are simply overwhelmed by the sheer amount of menus and submenus that exist within the directories of a computer's hard drive, and anything that can be done to eliminate the need for the casual user to have to wade through these menus should be done. One innovation that

newer operating systems utilize on both the PC and Mac platforms is that separate folders exist for a user's documents, pictures, and the like. Computer novices need to be educated on how to properly handle computer storage media. For example, it may be tempting for some to use floppy disks as coasters for beverages (Gookin, 1998, p. 110).

*Question 2: The different terms used by people who know something about computers often confuses people like me who don't know a whole lot about computers. How can I better understand the language that people use to describe computers?*

Acronyms are arguably one of the greatest curses of modern technology. While much of the terminology used in "computerdom" can be found in dictionaries, textbooks, and self-help manuals, many users want to be able to understand how to use a computer in layman's terms. I recently heard of a newer acronym known as "DAGS," which is short for "do a Google search." This is an example of the excessive use of acronyms, as no acronym should be necessary for something as routine as an internet search using one of the world's most popular search engines. While some acronyms may be necessary, the industry should move towards eliminating useless ones, such as the one in the "DAGS" example.

*Question 3: I often don't know where to find certain programs that I need, or when I am using a program, what tools I might need to use within that program. For example, if I am looking for the "spell check," do I look under "tools" or "window" from the bar at the top of the screen?*

The entire point of the start menu in Windows XP (Figure 2.1) and the dock in Mac OSX is to provide an easy way for users to access programs, aside from simply putting a shortcut to the program on the desktop. The dock, however, is a better solution (Figure 2.2). All programs are readily viewed at one glance along one side of the screen, and as the cursor is moved from

icon to icon the program icons can be enlarged to make it clear which program is about to be selected. The best thing the industry has done to address finding tools is to make tool bars with icons that very easily identify the function of each button. While some programs are better at this than others, tool bars are available in every industry-leading program. To make the tools more accessible to novice users, companies like Microsoft have designed programs (the Microsoft Office suite, for example) that automatically present commonly used tool bars upon start-up (Figure 2.3).

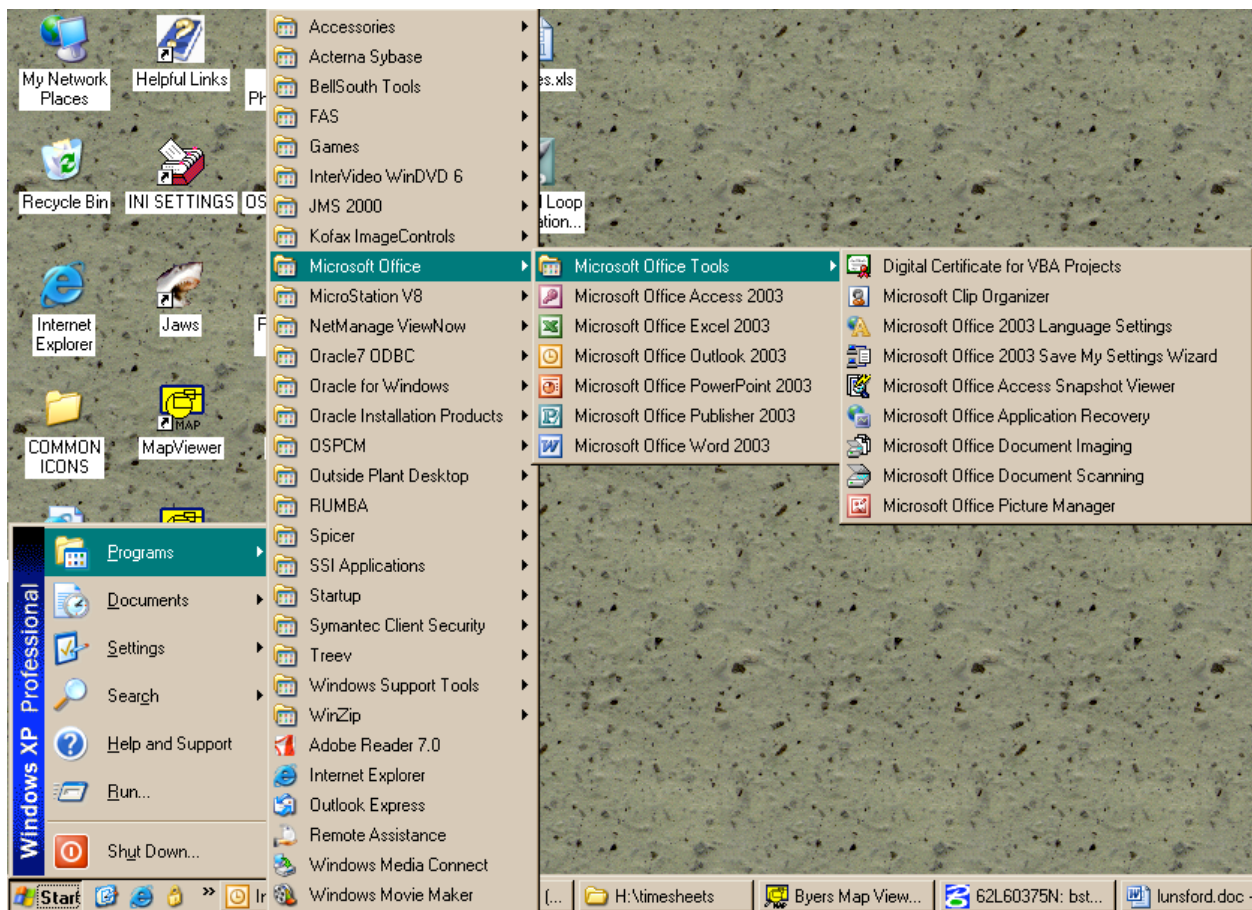


Figure 2.1 Expanded view of the start menu from Windows XP

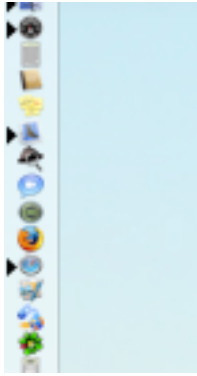


Figure 2.2 A picture of the dock on the Macintosh desktop

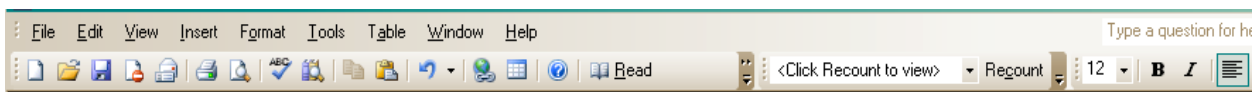


Figure 2.3 Typical toolbar from Microsoft Word (part of Office 2003)

*Question 4: I don't know how to use different computers such as IBM's or Dell's because they are made differently and have different monitors. I have trouble even turning these computers on and off because of how different they are. Is there any way I can know how to use each one?*

Computers can be very different in the way in which they operate, even though many things are standardized in the industry at large. Most computer manufacturers have adopted the use of a universal symbol for the power switch, cord, and ports for USB, Firewire, and other external devices. On some Dell computers different color codes are used to help people understand which connections relate to what, such as what connects the mouse to the computer itself. The industry needs to attempt to better educate consumers on the different symbols and what they mean, and this could be done by developing a simple visual aid.

*Question 5: How do I transfer information from a laptop computer to one with a monitor that sits on a desk?*

There are obviously many ways this can be done, most commonly via email, file transfer across a network, or through the transfer of data using a storage medium. Since there are so many ways of doing virtually the same thing here, the best thing to do is to educate the user on the most commonly used approaches so as to not cause further confusion. The advent of flash memory in recent years has certainly made this whole process much easier. Many people have an easy time of using USB flash drives and memory cards to save information, and saving information this way is usually less time consuming than writing to a floppy or burning a compact disk. Advances in storage technology, coupled with a deeper integration of broadband networks, have enabled users to transfer large amounts of data quickly and easily, and the industry must continue to develop these technologies so that users will be able to move critical data between machines faster than ever before.

*Question 6: How do I transfer information on a disk from a laptop computer to a desktop?*

The answer to this question is a combination of the answers from questions 1 and 5. Some of the people I polled seemed to think that transferring information was more difficult if the information was only available on a disk, versus first being present on a computer of some sort. In reality, the information being present on a disk makes it easier to transfer to a computer, as its presence on a disk is one of the possible steps that can be taken to transfer information to begin with. The best solution here is to continue to better educate users on data transfer practices.

*Question 7: I don't know how to get on the internet using some types of computers since they have different internet programs like Safari, Netscape, and Internet Explorer. Why don't all computers have only one main logon screen to access the internet so it won't be so confusing?*

Different internet browsers exist due to the competitiveness of the marketplace, and if only one were allowed to exist it would be a monopoly. When Netscape sued Microsoft some years back for bundling Internet Explorer (IE) with Windows, it alleged that the inclusion of IE in Windows allowed an unfair competitive advantage to Microsoft since their browser was automatically present on all PC's that used Windows as an operating system. In recent years, internet browsers such as Mozilla's Firefox have become more popular than IE because of their ease of use and reliability. Software developers have streamlined browser use by making icons more visible, adding advanced features such as RSS feeds and tabbed browsing, and allowing web addresses to be typed in the address bar using a single word. Recent innovations in search engine technology include ones like Dogpile (Figure 3.1) that aggregate searches from several other similar programs (Google, MSN Search, Ask Jeeves, ect.) into one cohesive group.

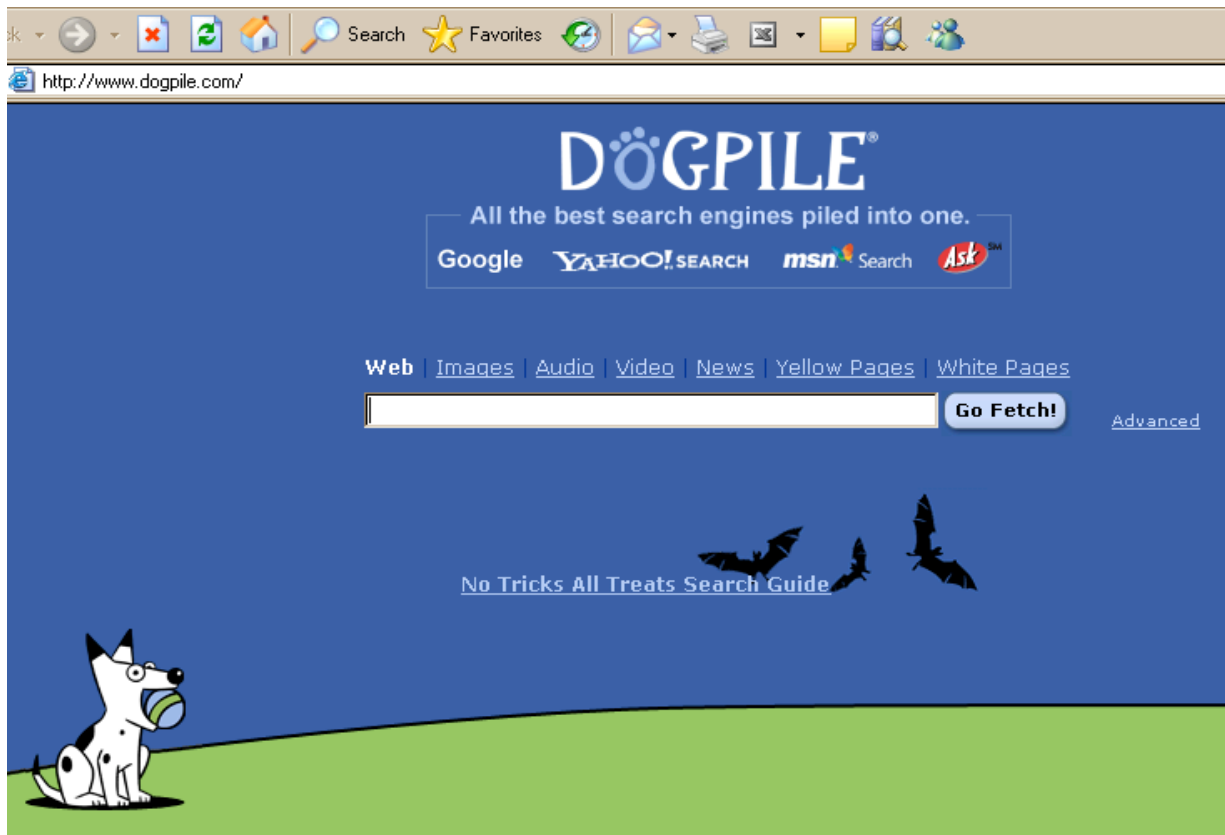


Figure 3.1 The start page of Dogpile from the Internet Explorer browser

The idea of a main logon screen is already present in many networks, but of course this is for logging onto the network or the computer, not just the internet itself. Some people create a startup key disk to make it almost impossible for an unauthorized user to access their computer, requiring a person to have the disk in order to start the machine (Maran, 2003, p. 88). Placing a shortcut to a search engine on the desktop is probably the quickest way to ensure that users have easy access to the internet. Using a broadband connection to allow the person to automatically connect instead of having to go through the process of dial-up can eliminate some of the confusion some people have with trying to select access numbers with acceptable connection speeds. Broadband has grown to the point that the FCC has even recognized its benefits and developed its own initiative to help promote the technology (Stair, 2005, p. 205).

*Question 8: I wonder if there is a way to get information on how to keep a virus from getting on a computer. Are there steps to take so your computer can have an anti-virus program? If so, how many? Can it be done the same way on any computer such as an Apple, Dell, Gateway, or even a laptop? Does a person have to take different steps because of the different computer makers?*

It is important for users to understand that a virus must be activated, and this is most commonly done by people running infected programs disguised as email attachments (Jedlicka, 2004, p. 162). Aside from people tacking precautions with email, another popular prevention method, anti-virus software, has been around for some time. Probably the most popular type of program used to combat virus infiltration in computer systems is made by Symantec, with versions available for both PC and Mac platforms. Running anti-virus software is essentially the same on any computer, and assuming the same program is being used, the biggest difference between platforms will most likely be the installation process. A major threat that has arisen in

recent years is spyware, software that can monitor the activity of users on their computers and send the information back to various sources. Ad-Aware and SpyBot Search and Destroy are very effective shareware programs available to help remove spyware. I have found that running both of these programs simultaneously in conjunction with anti-virus software helps to eliminate almost all unwanted programs. The anti-spyware programs identify threats not found by anti-virus programs, and vice-versa, so running both helps to ensure a thorough examination of the entire computer. Cookies, web bugs, and spyware are all possible risks to personal privacy (Morley, 2006, p. 638) that must be monitored and eliminated where necessary. Education is a primary factor in helping people understand how to use these powerful tools to protect their property and information.

*Question 9: I have trouble setting up an email account. I don't know how to do a lot with email like sending messages, "carbon copying" a message or address and then forwarding it to someone else, or recycling a message and putting it into the trash. There is so much more to email that people do not understand or know how to use even though it is provided for them. I know how to check email and attempt to send a message, but how can I know if my message was received?*

Many people are still becoming acquainted with electronic mail, and are getting used to the idea of a message that can arrive anywhere in the world within the blink of an eye (Stokes, 2000, p. 187). Since email accounts vary by protocol type (IMAP, POP, ect.) and by internet provider, many users find the task of using email very daunting. There are many written and online tutorials (like this one, <http://www.webfoot.com/advice/email.top.html>) that have been developed to help people learn how to establish email accounts and utilize email aggregation programs such as Microsoft Outlook. The industry has made email setup more accessible to new

users by providing built-in tutorials (Figure 4.1) and help menus in many newer programs. The mail program used in the Mac OS has a very easy to use menu system; once “preferences” is selected from the drop-down menu, a tabbed window (Figure 4.2) comes up that enables a person to easily alter any of the settings in the program, including adding and changing information about email accounts tied into the program.

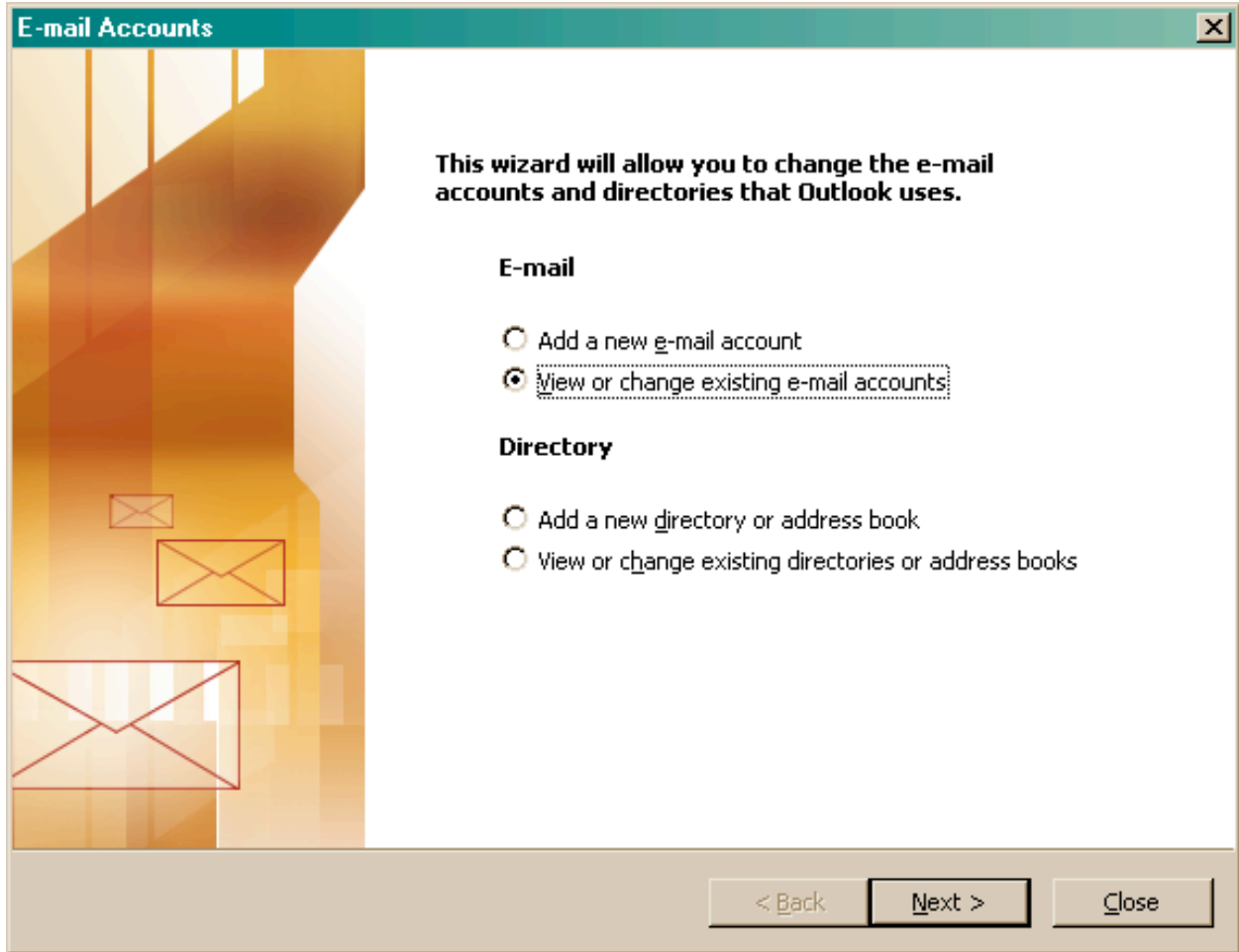


Figure 4.1 Example of a tutorial (or “wizard”) from Microsoft Outlook (part of Office 2003)

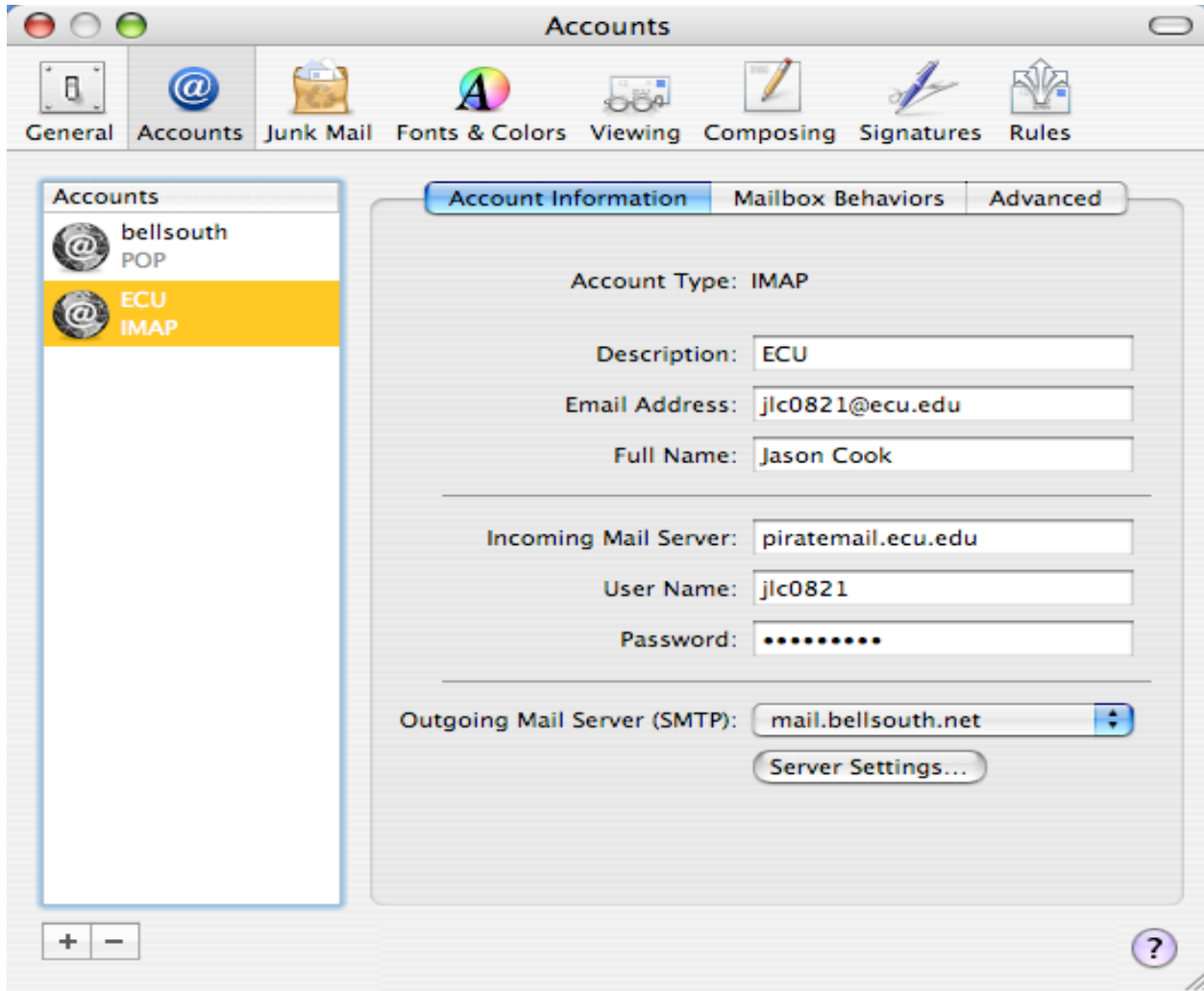


Figure 4.2 A picture of the mail program from the Macintosh OS

Some email programs allow users to check receipt of a message. For many years, America Online (AOL) has allowed its members to not only check the status of a sent email, but also “unsend” the email if it was sent to another AOL member and has not yet been read. AOL uses its own proprietary protocols to send and receive email (White, 1997, p. 237). For novice users, internet service providers like AOL specialize in offering additional icons and search options upon startup to help people navigate to the information or service they require.

*Question 10: I don't think people understand how to set up a computer. One day at school I was using a Dell computer in the computer lab and I needed to print something. I went*

*to the top and clicked on “file” and scrolled down to “print.” However, I found out that there were three different types of printers and I was unaware of this until about 15 minutes had passed and I finally got some help. Can they make this simpler?*

This particular issue can be resolved most simply by having competent personnel responsible for network setup and implementation. Students should be restricted to printing to a specific printer, dependent upon the machine they are using. It is imperative to limit user access to certain elements of the network in order to maintain proper control and supervision. There are certainly instances where users need to be able to print to different printers (Figure 5.1), but this should be allowed only on an as-needed basis when it comes to dealing with the general public.

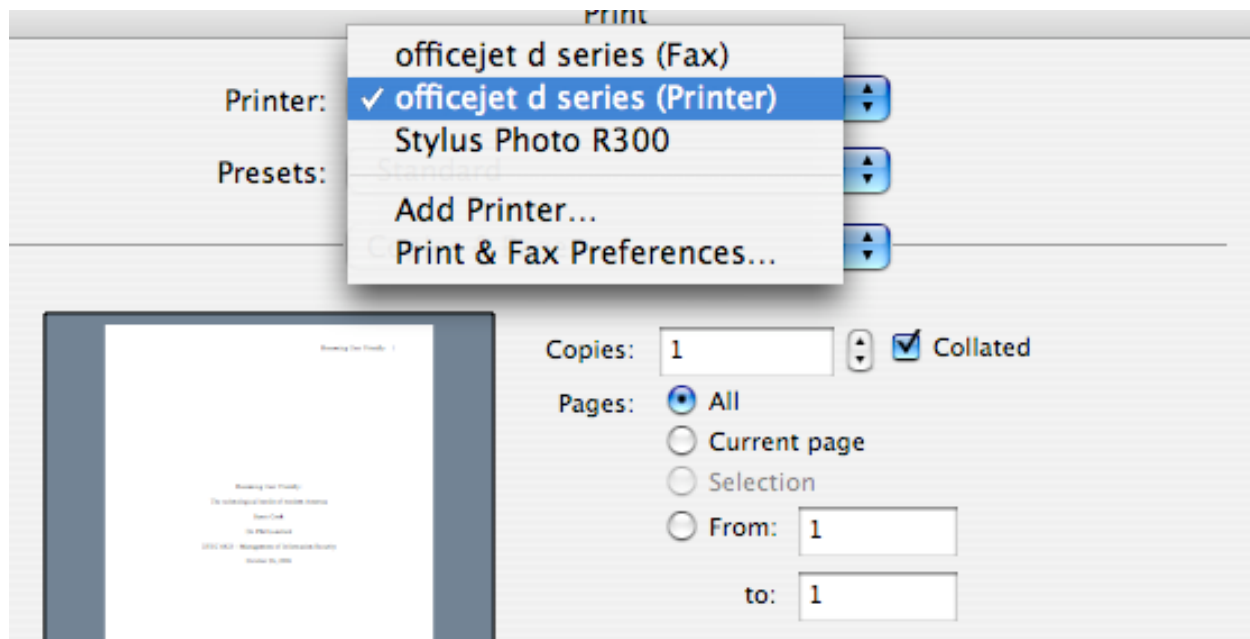


Figure 5.1 The printer selection screen from Mac OS X

The person that wrote this question was flabbergasted by the printing options available and had no earthly clue as to which option was the most viable. Newer users typically have a very myopic view of computers and are not prepared to readily assimilate all of the information of the options available to them at once; therefore, the amount of information available should be

limited until those users have advanced their understanding of the technology to a point of advanced comprehension. In a nutshell, this is the best way to make the process simple for those users.

### Conclusion

The issues that have been discussed are only a fraction of those faced by users. Through several hours spent researching material and interviewing people, I have tried to bring to light some of the most persistent problems that plague Americans seeking to better utilize technology. The computer industry must better respond to the needs of its customers by continuing to be vigilant about making its products more accessible to persons of any literate age level. The security of personal information will continue to be a much wider concern so long as users continue to be ignorant of the basic concepts of computer use. For computers to be “user friendly” is not just a request, it is a requirement.

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