Tech Talk

Keeping Your Data Safe

Tim Ponder and Marty Ropog

Back-up System

As the price of computers continues to fall, technology use in literacy programs is on the rise. Today, one major cost of using a computer comes in the time it takes to create or input information. If there is a problem with hardware or software, the cost of recreating or re-entering data can be enormous. What can be done to minimize the chance of a large, or even small scale catastrophe? Good computing habits are the key, and one of these is to be both informed and prepared. Central to keeping data safe is the development of a backup system that fits a program's needs and provides a way to recover from viruses, user error, equipment failure and any other loss of data. When considering how to best backup, there are several choices to be made. Following are pros and cons of different methods and equipment and some options and ideas to help you make the best decision for your needs.

What to back up?

The hard drive of a computer system contains both the software needed to run programs and applications as well as the data and information created and used by these applications. Backing up the right information is the key.

By backing up the entire hard drive, all information could be easily recovered if the system were to crash. Applications, configurations and data would all be backed up in one place, allowing for a very quick and efficient way of restoring a full system. However, backing up the entire system is time-consuming, often requires more user interaction, and requires more capacity, leading to additional cost in hardware, media or both.

Backing up only the data or information files allows for quicker backup and restore time, requires a smaller amount of space, and increases hardware and media options. The drawbacks to this method include the increased chance of missing a key file, the need to be more familiar with the software and directory structure of the system, and the necessity of recreating the entire operating system in the event of a total crash.

What to use?

What type of hardware and media is best for backing up? Again, it depends largely on individual situations and needs. To begin, check to see if the system contains a backup drive of any sort. Next, talk to the technology coordinator or support person at your location to see if a backup method is provided. If not, then the following should be considered.

There are both internal and external drives and there is little difference in performance between the two. An external drive offers portability, allowing it to be used at multiple locations with relative ease of installation. Internal drives do not require extra workspace or a power outlet, and they reduce the chance of theft or accidental damage. However, unless the drive is on a network, the internal drive is limited to backing up a single system and can be more difficult to install.

What type of backup device is best?

Removable Storage Drives: (NOTE: There are several brands and models of Removable Storage Drives, but for simplicity we will refer to the popular Iomega line of ZIP, JAZ and DITTO. The Syquest brand SyJet and EzFlyer are top quality high performance products as well, and this is not meant to be an endorsement of the Iomega products over any other brand of hardware. The JAZ is roughly equivilent to the SyJet, while the ZIP and EzFlyer are in the same class.)

In addition to backup capability, ZIP drives also have many other uses, such as storing and transporting large files, that make them appealing. The hardware and software are simple to install, and they are easily transported from location to location. ZIP drives are also less expensive than most other media suitable for backup. However, ZIP drives do not have the capacity that would allow a user to easily make a complete backup forcing an adaptation of the backup scheme.

Tape Drives: Tape drives have much larger data storage capacity than many other media since they are designed for this specific purpose. They are more likely to be able to be automated or perform unattended backups, due to additional space. The limitations include the fact that these drives are designed for backup and backup only, are more complex to install and set up, and are more expensive.

So, what does all this mean to the user? A brief summary, some tips and further considerations follow.

If the majority of the data is (and is likely to stay) word-processing files, spreadsheets or other smaller-sized files AND if the user is familiar with directory structure and comfortable with computers, a ZIP drive may be ideal. Files may be split between ZIP disks and appended when needed. For instance, a ZIP disk would hold most program's data generated by the coming ABLE IMS database. It is important for the user to understand directory structure to insure that all intended files are backed up. The user would also need to be in a position to back up manually when necessary. All operating system and application installation disks would need to be kept in a safe place as all software would have to be reinstalled in the event of a crash. It's not feasible to use a ZIP drive to make full backups, as an average system by today's standards could easily take ten or more disks. On the other hand, external ZIP drives also have other uses outside of backup and might be able to serve in other capacities when not being used for system backup.

If there is quite a bit of data to be backed up, including numerous databases, records, spreadsheets, word-processing, graphics and/or desktop publishing documents, an actual tape backup unit such as a Travan/QIC or Iomega DITTO drive would be a good choice. These drives work with most systems and hold from 800 megabytes to 3 gigabytes. Most users would be able to backup a majority of their hard drive, if not all of it, on one or two tapes.

One possible compromise between the above situations is the JAZ-type drive with its 1.0 GB capacity, portability, removable disks and speeds approaching some hard drives. JAZ drives combine the capacity of a tape system with the portability of a ZIP drive. JAZ drives are more expensive, but provide the capacity of some tape drives with all the advantages of a ZIP drive.

If a program needed greater capacity and/or speed, such as backing up a network of computers or a server, DAT drives are another type of drive. Though much more expensive (generally $1000 or more) these drives provide fast efficient backup of 4 to 24 gigabytes on a single tape.

Most storage device manufacturers bundle their own software with the hardware, so choosing the right software is not usually an issue. These software packages often include scheduling and file-selecting features, allowing the user to decide what to backup and when to do it. Using this software it is possible to develop a schedule of full backups, data backups and what are termed incremental backups or backing up only those files that have been changed since the last backup or a given date.

Other tips

Store backup media in a safe place. For maximum security, a copy of the backup should be stored at a different location or at least not left in the machine. Incremental backups or specific data backups should be made often, minimizing the chance of any lost data not being backed up. Backup on a schedule or as part of a routine, again decreasing the chance of any data not being backed up. Most newer systems are capable of backing up while other tasks are being performed.

An example

In reality, a backup system would likely combine the characteristics of a full backup with the more limited data backup. Using a tape backup device capable of backing up an entire system, a program might develop a scenario such as the following.

Realizing that though a complete system backup is desirable, it is not necessary to use this method daily or even weekly, the program decides to backup the entire system twice a month, with the newest copy being kept at that location and the previous copy kept offsite. In addition, a full backup is made after any major changes to the system, such as new hardware set up, new users, or new software. Then, once a day, all data files are backed up to provide a very recent copy of all information. The program also has several other options. Using the backup software, an automatic backup can be scheduled to backup all files that have been changed within a certain time period or since the last backup. These tapes can be rotated and moved offsite to increase safety and efficiency, though it then becomes a much more complicated task and care must be taken in the event files need to be restored to find the most recent version.

If the program elects to use a smaller ZIP type drive, the scenario would change a bit. Most systems come with a backup copy of the system software and applications, or the ability to create backup disks. These can be used to rebuild a system where a complete system backup is not available. These should be copied if possible and the two sets carefully stored at separate locations. Using the ZIP disks, the data would be backed up in a manner similar to the one outlined above.

The backup units discussed here are generally an add-on component when purchasing a computer. For existing systems, tape backups can be purchased from most any source selling computer systems and/or hardware. Hopefully, you will never have to use your backup. However if you need to restore a system or selected data, having a backup will become worth the small expense and time spent.

Included in the next issue of Tech Talk will be a discussion of Uninterruptable Power Supplies and how they help prevent equipment failure and increase data safety.

OHIO Technology Update

IMS Update

The Information Management System, which will allow ABLE programs to keep electronically the information for the Annual Performance Report (APR), is being developed this year through the Ohio Literacy Resource Center. Ronald W. Roberts of Roberts Communication, Brunswick, OH, was chosen in July by the IMS Task Force as the developer of the system. Fifty-four ABLE programs volunteered to be pilot programs in this development year and will receive their initial training on the program in October. All testing of the system will take place before June 30, 1998 so that the final release of the product to the field can be made in July, 1998. All ABLE programs will be using the system in 1998-99.

Tech Team

The OLRC Tech Team is composed of teachers and administrators in Ohio adult basic and literacy education programs who are using some form of technology in their programs and are interested in sharing with each other. The Tech Team also serves as an Advisory Group to the OLRC on technology activities. A meeting was held of this group in Columbus in September where individual program activities were shared, training was provided on forums and Internet lessons, and discussions were held on the Spring Tech Conference, and how to get teachers to use the Internet. Two on-line chats were also held during the summer. If you would like to be a part of this technology support group, call Marty at 800-765-2897, ext. 21.

New Technology Mini-Grants from NIFL Grant

The OLRC is the recipient of a 3-year grant from the National Institute for Literacy (NIFL) to continue as the Midwest Techology Hub for the NIFL's LINCS project. This grant allows the OLRC to continue its practice of awarding small mini-grants to Ohio adult literacy programs to work on technology projects. This year, 10 grants of $500 each will be given to local Ohio programs. The emphasis this year is on refining or developing local materials to be put online for other teachers and students to use. Information on this project and instructions on preparing the proposal will be mailed to all program directors the end of October. Teachers are encouraged to talk to their directors/coordinators about applying for this funding.

Evaluation of WWW Documents

When you are on the World Wide Web looking for good resources for your classroom, do you have trouble trying to evaluate whether the site you have is reliable or of "good quality?" What kind of factors make up a "reliable" or "quality" site anyway? These questions are important to ponder as you wade through the zillion+ web documents now available at the touch of a keystroke. Some factors to consider are:

- Who is the "creator" of the site? Part of the URL address will tell you the type of institution from which it originates (e.g. .edu=educational institution, .gov= government institution, .mil=military institution, .com= commercial business, .net=network service provider, .org=organization, and .country abbreviation=a specific country such as .ca for Canada or .uk for United Kingdom)
- If you see this sign in the address "~" (called a tilde), it comes from someone's individual account.
- Does the creator of the site disclose his/her name, organization, contact information (such as e-mail address), and information sources? Is a date of latest changes provided?
- Is the site designed well for readability, navigation, relevance, and ease of use (i.e., the multimedia aspects such as graphics, video and sound don't strain your system; or you don't have to download and install several plug-ins in order to use the site).
- Is the content free, or does it cost something just to access and use the "real" content of the site?
- Is a bibliography of original sources on the site?
- Can you determine if the content is opinionated or skewed to favor one view over another?

Of course some of these issues are relative depending on what you want and need. A site that is "appropriate" for one user's needs may not be at all for another, so this is in some ways a personal judgment call. Overall, in determining reliability of a site the more information the creator is willing to disclose about him/herself or the organization that supports the site and about the information on the site, the easier it is for you as a user to verify its accuracy.

Other URLs for more information:

- Ciolek, T. Matthew, ed. (1996). Information Quality WWW Virtual Library. URL: <**http://www.ciolek.com/WWWVL-InfoQuality.html**>
- Evaluating Internet Resources: A checklist. URL: <**http://infopeople.berkeley.edu:8000/bkmk/select.html**>
- Hinchliffe, Lisa J. (1996). Research Via the Internet. URL: <**http://alexia.lis.uiuc.edu/~janicke/Evaluate.html**>
- Terass, Richard (1996). Evaluating Internet Resources. URL: <**http://web.wn.net/~usr/ricter/web/valid.html**>
- Tillman, Hope N. (1996). Evaluating Quality on the Net. URL: <**http://www.tiac.net/users/hope/findqual.html**>

A summary by Margarete Epstein of a workshop produced by Library and Information Systems at Kent State University.

Web Sites to Explore

■ Funding Sites

• At-a-Glance Guide to Grants **<www.sai.com/adjunct/ nafggrant.html>** gives an overview of grants-related Web pages and provides list of direct links to web pages for funding agencies, foundations, and organizations. Of particular interest might be the tutorials on how to write grants.

• The Foundation Center **<www.fdncenter.org/>** and the Grantsmanship Center <**www.tgci.com/foundations/ typefdn.htm**> provide information on non-federal funding sources, background on proposal development, and links to many private and foundation funding opportunities.

• The Federal Register grant announcements are listed each day at the Grantsmanship Center's site at <**www.tgci.com/sampler/fr082997.htm**>.

■ Archived National Listservs

The National Institute for Literacy has a place on its web site <**novel.nifl.gov/forums.html**> where all the NIFL listserv information is archived. This means you can go in and find posted messages and search for them by key word, date, author, subject, or thread for the Workplace, Family, ESL, LD, Homeless, and Health listservs. Information is also available for the National Literacy Advocacy (NLA) listserv.

■ Student Stories

Students are encouraged to put their own stories on the National Adult Literacy and Learning Disabilities Center's web site at <**novel.nifl.gov/nalld/archie.html**>. The recent Story of the Month is about a woman who has learning problems and is making changes in her life. This student story page is sponsored by Archie Willard, a student from Iowa who has been active in many national projects.

■ Statistics

FedStats at <**www.fedstats.gov**> is a new site that allows users to access statistics from more than 70 federal agencies, including the Bureau of the Census, the National Center for Education Statistics, and the Department of Labor. It has an alphabetical subject index and also allows keyword searches.

■ National Center for the Study of Adult Learning and Literacy

The National Center for the Study of Adult Learning and Literacy (NCSALL) is a collaborative effort between Harvard University and World Education to provide basic and applied research in the field of adult basic education. Their web site at <**hugse1.harvard.edu/~ncsall/**> contains an overview of their research projects and complete text of some publications. Of particular interest may be the information on the longitudinal study being undertaken. The first draft of an initial options paper is located there and practitioners are encouraged to provide feedback using the online form.

■ "Top Ten" Literacy Sites on LINCS

The National Institute for Literacy has added a "Top Ten" page to its Web Site at <**www.nifl.gov/top10/index.html**>. This page links to pages of relevance to adult basic and literacy education professionals and students. Among the topics are Lessons from the Holocaust, Multiple Intelligences for Adult Literacy and Adult Education, Student Work Online, Web-Based Lesson Plans, Project Self Lesson Plans (from Kansas SLRC), Math Literacy Newsletter (from OLRC site), and Recommended Trade Books for Adult Literacy Programs (from OLRC site).

■ OLRC Student Comments

The Ohio Literacy Resource Center has a page on its Web Site at <**literacy.kent.edu/Forum/Student/**> where students can post addresses of web sites they like and explain why they like them. This is open for students from any state to use. Encourage your students to be among the first to add their comments.

■ Searching the Internet

An excellent tutorial for searching the Internet can be found on the Minnesota Literacy Resource Center's web site at <**www.mlrc.stthomas.edu/profdev/library/home.htm**>. The tutorial includes instructions on using Yahoo, Infoseek, WebCrawler, and Alta Vista, concluding with an online test!

THE OHIO LITERACY RESOURCE CENTER is located At Kent State University, 414 White Hall, P.O. Box 5190, Kent, OH44242-0001 1-800-765-2897 OR 330-672-2007
E-mail address: olrc@literacy.kent.edu
Web site: literacy.kent.edu