

Electronic Portfolio Design

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Abstract:

This paper presents an approach for designing and developing an electronic based student portfolio management system. As an institution, we have been striving to provide students with a means to demonstrate the competencies they have achieved during their college career. One of the obstacles colleges face in portfolio development is that much of the student's work is in an electronic format. To accommodate this, we have investigated methods of maintaining a college wide database of student portfolios.

Electronic portfolios are becoming increasingly popular with educators and business people as a tool for maintaining and showcasing student's work. Student portfolios demonstrate student's accomplishments and capabilities. Technology allows students to develop electronic portfolios, which conveniently and securely store and document their work.

Electronic portfolios are collections of work, which can be stored digitally on a variety of media. They demonstrate a student's intellectual growth and current capabilities. They offer a much more flexible venue in that they can include data as well as text, audio, video, and graphics.

This paper presents an approach for selecting the media for an electronic based student portfolio management system. Universities strive to provide students with a means to demonstrate the competencies they have achieved during their college career. One of the stumbling blocks associated with maintaining a portfolio in today's educational environment is that much of the student's work is in an electronic format. To accommodate this, we have investigated methods of maintaining a college wide database of student portfolios.

With the goal of maintaining a college wide electronic portfolio database in mind, we established a set of criteria that we felt we had to meet in order to establish an effective and usable student electronic portfolio system.

Our first criteria, of course, was that it had to be technically feasible, both from a cost standpoint and from a student and faculty use standpoint. We addressed the question of the maturity, stability, and reliability of the technology. We were very concerned about ease of use for students, because if it was not easy to use, it would probably not be used. From the faculty's perspective, we recognized that if it were not manageable and relatively easy to use, we would not see strong faculty support for its use.

The options for maintaining electronic portfolios were varied in their feasibility and effectiveness. The investigated options were all technically feasible for this institution and included maintaining the portfolios on: recordable CD media, ZIP disks, floppy diskettes, Internet accessible Web site, and student accessible file server.

Recordable CD Media:

Recordable CD-ROM media and associated recorders and readers are widely available and relatively affordable. To use this approach, the student would "burn" their projects onto the media either with their personal equipment or at the institution's resource center. The storage capacity is high for this type of media. Pros: Recordable CD media provides relatively permanent and fairly durable storage. The media is inexpensive (typically less than a dollar per CD). It is portable and provides a secure and private storage environment.

Cons: Even with the most modern CD recording equipment, the recording process tends to be slow and relatively labor intensive. CD recorders while 'affordable', are still not widely accessible. While the storage capacity is high for this media, over 600 megabytes, it drops dramatically with successive "writes." CDs are easy to lose and may be damaged if not shown a reasonable degree of care. Students are accustomed to music CDs, which continue to function quite well, even if severely abused, thus they tend not to have an appreciation for the care required for a data CD. Successful recording normally requires technical assistance and there is a high learning curve if the CDs are student maintained or high administrative expense if they are institutionally maintained.

Decision: REJECTED primarily because there is an unacceptably high administrative cost and learning curve associated with them.

ZIP Disks:

The ZIP disk is another widely used mature technology with relatively high capacity and excellent reliability. The media tends to be more expensive than recordable CD-ROM media: approximately \$10 versus \$1 for the CD-ROM. The storage capacity is approximately 100 megabytes or 250 megabytes and is not subject to degradation with reuse. Ease of use is one the ZIP disk's strong points. A student would use it as if it were a floppy diskette, reading and writing to the disk like any other drive in the

computer. Pros: Moderately priced and very reliable. ZIP disks have a medium to large storage capacity that does not degrade with reuse. There is virtually no learning curve associated with the use of the disks; if the student knows how to use the computer they know how to use the ZIP disk. They are portable and widely available. Like the CD-ROM, they afford the user high security and privacy.

Cons: ZIP disks are easy to lose if not maintained by the institution. Their portability and desirability make them much more likely to get lost, or go astray.

Decision: REJECTED primarily because of the unacceptably high risk of loss.

Floppy Diskettes:

Floppy diskettes are certainly the most mature storage available with personal computers and the storage media students are most familiar with. They are widely considered to be one of the least reliable components of the computer system. Like the ZIP disk there is virtually no learning curve associated with them.

Pros: Floppy diskettes are inexpensive at about a dollar each. They are widely accepted storage media with practically no learning curve associated with them and they are extremely portable.

Cons: While they are inexpensive, on a unit storage per dollar basis, they actually are one of the most expensive storage mediums available at over \$5 a megabyte. They are low capacity, unreliable and easily damaged, and easy to lose if not maintained by the institution

Decision: REJECTED because of high cost, insufficient capacity and excessive failure rate and loss.

Internet Accessible Web Site:

The concept of a widely accessible Web site storage location is inherently very attractive. Being able to access your materials from any location is convenient and increases the likelihood that students would take advantage of the storage facility. Security issues abound, however, and making a site secure and private can be costly in software and administration expense.

Pros: Web sites are widely accessible and the user interface is easy to use. Basic sites tend to be relatively inexpensive to house. Like all hard drive storage, costs are low.

Cons: Web site security tends to be very weak without high cost software and administration. They are weak in the area of student confidentiality and there is a high potential for intellectual property violations. Off site access can be slow and all access can be slow during prime usage times.

Decision: REJECTED because of excessive security risk, intellectual property concerns, and high setup and administrative costs associated with a secure system.

Student Accessible File Server:

In networked environments, the concept of using “shared” drives is well established and with most network operating systems, controlling access is relatively straightforward. There is a modest learning curve associated with this approach, but network file handling tends to be something that students tend to teach one another. Media costs have fallen dramatically and are now on the order of pennies per megabyte. Pros: High security; can easily be password protected and setting the drive up as “write once” protects files from accidental overwrites. The drives are easily backed up and normally very experienced and qualified people are involved in this process. The drives tend to be easy to use (simple file copy). They provide a single storage point, which is easy to manage and faculty can easily find and review materials. Security is good, but not great because of the number of people involved. Cons: This type of storage is accessible only on campus because of security concerns about outside access to the campus network. Faculty assistance is required to change or delete items because students have “write once” file permissions. Subject to “file size” abuse; there are no controls on how much material a student may put on the shared drive and they are notoriously weak in policing themselves to eliminate unnecessary and outdated materials.

Decision: ACCEPTED because it is easy to use, relatively secure, easy to backup for redundancy purposes, little chance of file loss, low administrative overhead cost, and relatively low program cost.

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