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Pathways to Producing Digital Portfolios

Eleanor J. Flanigan, Ed.D., Management & Information Systems, Montclair State University, 1 Normal Avenue-PA-347, Upper Montclair, NJ 07043, Phone: 973-822-9231, flanigane@mail.montclair.edu, Fax: 973-822-0345

Susan Amirian, Ed.D., Media Communications & Technology, E. Stroudsburg University, School of Professional Studies, E. Stroudsburg, PA 18301, 570-424-1588

BACKGROUND

Within the past decade the concept of portfolio development in the arts has expanded into other academic and professional areas. The original design of a portfolio as carried over from artists or graphic design professionals was traditionally on paper or cardboard as well as exhibited through photographs or pieces of sculpture. A contemporary approach is to assemble these artifacts and preserve their images by digital technology. The use of portfolios as a method of preservation of special work and as a method of presentation of technical skill is helpful for many groups, including instructors, students, and those beyond the classroom environment.

Portfolios serve as tracks or pathways showing initial work and then progressing along with the creator's development of a tangible product showing advancement in the learning process. This ongoing process has taken hold in education with teachers aware that helping students to build the skills necessary to create digital portfolios should be the start of life-long professional development tool (Barrett, 2005). Not only do students strengthen their self-reflection but they also learn or hone technical skills needed to create the portfolio

INSTRUCTIONAL USE OF DIGITAL PORTFOLIOS

Designing portfolios using technology has been introduced in classrooms for both professional and instructional purposes. Teacher education has responded to national accreditation criteria for methods of assessment for aspiring teachers. Many school districts continue with this technique, requiring the staff to exhibit concrete evidence of their own development within the classroom. Teachers, having perfected their own skills in developing their professional portfolios, pass on concepts of portfolio creation to their students. Thus there is a ripple effect through all academic levels.

Students on all levels use components for portfolios which different names, depending on the goals the creator has for the final product. Some developers call their portfolios digital story-telling. Some use the final portfolio as a way of learning how to use technology to digitize their precious materials. Others use portfolios for professional career building or for employment interviews. Some use portfolios to summarize and preserve snapshots of course projects. What these portfolios are called may differ and why they are created varies from case to case. Basically the contents can be whatever the creator wishes to preserve.

The type of storage and distribution is also one of the differences between traditional or paper-based portfolios and digital portfolios.

Archiving artifacts with production of a CD or DVD or storage on a Web site is basically the final distribution choice for digital portfolios. Content and sophistication of the final product depends on its purpose as well as the expertise and/or creativity of the designer. Artifacts can be more diverse with digital portfolios than with paper portfolios since digital technology can include multimedia as well as text. Digitizing artifacts also allows for creative connections as artifacts can hyperlink and provide broader branching.

Recently collegiate business schools have begun to recognize and develop programs for portfolio creation. These schools as well as university teacher education programs and local school districts are sometimes driven by the need for accreditation. Curriculum assessment

by clients of the program is a key ingredient for original accreditation and ongoing validation. Business schools in particular use portfolios as a measure of assessment along with using students' projects to support their claims of relevancy. In turn, the students use these projects to enhance their fledgling resumes.

WHY CREATE PORTFOLIOS?

Copious data are available to support why portfolios should be developed and to show the importance of the final product. Defining a purpose for the portfolio is the first step in development. The "why" must precede the "how" particularly for students who are unaccustomed to analyzing what steps they have already taken on the academic road to success. Students usually follow prescribed courses of study, depending on their mentors to move them ahead on a knowledge continuum. Portfolio creation requires self-reflection, a good reason in itself for portfolio creation.

There are several basic types or categories into which portfolios are placed: to support ongoing learning or professional development, to support assessment by either students or administrators, or to support marketing and employment.

By developing portfolios for assessment of learning, students are engaged in connecting their academic dots. According to Davies (2000), this requires "deep involvement on the part of the learner in clarifying outcomes, monitoring ongoing learning, collecting evidence, and presenting evidence of learning to others." The term "evidence" is synonymous with the artifacts students collect to populate their portfolios along with representing their reasoning in choosing one artifact over another. Barrett (2003) encourages students to recognize why this evidence or artifact "constitutes ... achieving specific goals, outcomes, or standards."

PROCESS OF CREATING PORTFOLIOS

Digital portfolios were implemented in the courses of the two authors at two state universities: Montclair State University in New Jersey and East Stroudsburg University in Pennsylvania. The courses in which portfolios were created were in the department of Management and Information Systems in the School of Business and the department of Media Communication & Technology in the School of Professional Studies.

The authors collaborated on portfolio creation strategies, sharing ideas on classroom methods and processes. Their collaboration also resulted in a full text/workbook not only describing the portfolio creation process but actually giving step-by-step directions on how to work through each area of portfolio creation. (Amirian and Flanigan, 2006)

One type of portfolio mentioned above was one supporting ongoing learning or professional development. This type, a course portfolio, was developed by graduate students for a course on imaging technology. The other portfolio, a career portfolio, was developed by business students to support marketing themselves and gaining employment.

In each course students created digital portfolios as an integral part of their learning experience in addition to contributing to their preparation for internships, cooperative work experience, or job searches. Students

in the graduate course created course portfolios as part of learning design, collecting an artifact of each assignment to display in their course portfolio. Students were required to include a short reflective text with each assignment. The business students created career portfolios as ancillary projects to strengthen job searches and interviews with prospective employers. They were required to keep a journal of their progress and submit this weekly along with the portfolio segment assigned. These types of activities aided both teacher and student assessment of course work.

The following are the steps taken in both courses, depending on the purpose and design of the portfolios.

1. **Introducing portfolios and the development process:** Students were introduced to the reasons why portfolios would benefit them both professionally and personally. They were given general procedures and calendars as procedural guides with benchmark dates. Samples of past student portfolios were shown to provide inspiration as well as to allow discussion and questions.
2. **Brainstorming and Discussion:** Students developed the concept of their portfolio designs and presented them in teams to the other students. This served as a valuable step as students quizzed each other and helped to clarify their thoughts.
3. **Designing the Theme:** These concepts included defining the visual metaphor the portfolio would follow graphically and describing the structure of the portfolio. For example, some students chose to use the metaphor of steps for their theme with each step representing an artifact. Another theme was a file cabinet with open drawers and file folders. Visualizing a graphic metaphor aided students in creating the organization, storyboard, behavior, look, and graphic feel of their portfolio pages.
4. **Navigating the Portfolio:** Linear portfolios would be viewed in a sequential way, one page at a time. The book metaphor, for example, would have a cover, table of contents, chapters, and page numbers. Portfolios using a Web structure could be viewed in any order the user chose, having the navigational ability to jump from one content area to another.
5. **Designing Pages:** Students created pages in the software of their choice, such as Microsoft PowerPoint, Adobe Photoshop, or Microsoft Word. These pages were used to hold the text, video, images, and links to documents that comprised their portfolio content. Special attention was given to using color creatively, particularly by using sharply contrasting colors. Students were aided by using the commercially available templates in PowerPoint for examples of color contrast. These pages also contained intuitive navigation, such as hyperlinks. Students learned the benefits of using symbols as well as text for their hyperlink navigation. Teammates and instructors provided constant monitoring to ensure that the portfolios had a professional appearance. Since the portfolios were designed as primary digital documents to be viewed on the computer, screen design, resolution, and legibility issues were introduced. Web-safe colors and system fonts were selected as universal design elements for consistent viewing across platforms.
6. **Selecting Artifacts:** Students chose documents, projects, and video that they felt represented their best works and abilities as artifacts for the portfolios. The artifacts were then digitized and stored. Paper artifacts were digitized by scanning, and all digital files were optimized so that two files for each artifact were saved. Optimization included sizing and using image compression to create files that would view efficiently on screen in the portfolio presentation. The instructor reviewed students' selections periodically, and students were guided in their selection or creation of effective artifacts.
7. **Storage of Artifacts:** Students stored their digitized artifacts on their own computers and portable flash memory sticks as well as on university servers. Some professional software and servers

are available as described in the next section on portfolio creation.

8. **Distribution:** When completed, students created a final CD or DVD for distribution. Students designed CD labels, jewel case inserts, and collateral paper pieces. Commercial software, such as Roxio, contains features to allow file transfer and label creation and case inserts.

PORTFOLIO CREATION WITH CORPORATE AND ACADEMIC COLLABORATION

Several programs demonstrate how diverse groups with a single focus are supporting portfolio development. These programs are collaborative, not limited to one population or one academic focus. Some of the solutions involve specific software vendors and dedicated course management systems. Some enjoy the benefits of working with off-campus servers hosted by the vendors while others are campus-based. The following is a short listing of some of these programs:

Epsilon Portfolio Management System by Indiana University Purdue University Indianapolis (IUPUI) CyberLab: A comprehensive electronic portfolio management system, offering a Web environment for students, faculty, alumni, and professionals wishing to build personal portfolios. Provides free membership throughout 2006 for students, faculty, or staff within a post secondary educational institution. Provides a personal lifelong cyber identity allowing ePortfolios and social networking, academic collaboration, and a course management system.

- Nuventive: TracDat supports assessment documentation and iWebfolio supports electronic portfolios. Is used by Western Michigan University Center of Excellence for Portfolios and Assessment.
- Chalk & Wire: Provides access to creation of ePortfolios with RubricMarker hosted on their server. Templates are provided for easy portfolio creation.
- FolioLive by McGraw-Hill: Online portfolio tool for students to create an electronic portfolio. Hosted on company server.
- BlackBoard: Added an ePortfolio feature to its Content Management System, allowing students to use professionally designed templates to store artifacts.
- Taskstream: Provides several tools for collaboration and portfolio management, particularly useful for teacher education. Assessment is through their Web Folio and Web Page Builders. Rubric wizards and other instructional design tools are available.

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RESOURCES

- BlackBoard ePortfolios: <http://www.blackboard.com/products/as/contentsys/>
- Epsilon: <http://www.epsilen.com>
- McGraw-Hill FolioLive: <http://www.foliolive.com>
- Nuventive: iWebfolio and TracDat software <http://www.nuventive.com/>
- Taskstream: <http://www.taskstream.com/pub/default.asp>

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