This draft of an article, written in 1997, emphasizes the essential elements of an electronic portfolio. The mentioned technology is dated. The beginning is a instructional scenario, not a reality-based one.

The Multimedia Report:
Electronic Portfolios Tell a Personal Story

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Last year when my wife and I went to the parent-teacher conference for our son, James, the teacher explained that James had earned a B in English and handed us a pile of his graded papers. This year at James' parent-teacher conference, James himself demonstrated what English skills he had learned by showing us his electronic portfolio containing scanned-in compositions, pictures of his community project, a movie about him tutoring other students, an oral reflection on his government project, and more. Also, he had a screen listing skills he still needed to master. The electronic portfolio revealed much about our son's learning.

Regardless of whether your school uses "traditional" letter grading systems or has "restructured" student assessment, electronic portfolios showcase the breadth and depth of student learning. Some would argue that letter grading systems of A, B, and C-- or even systems with numbers like 82, 92, and so forth-- are subjective and not based on solid, demonstrable criteria. Others would argue that restructured authentic assessment, while demonstrable, is not uniformly measurable. In a restructured environment, instead of grades, the student receives a checklist of what goals and competencies he or she has achieved and to what degree.

WHAT IS AN ELECTRONIC PORTFOLIO?

An electronic portfolio is a concise, annotated collection of student work that reflects educational standards. After teachers have established the goals and competencies, students identify their level of mastery and provide proof of learning. Since students usually select their own samples, they are responsible for selecting work that best demonstrates the richness and depth of their learning. They decide if a digitized drawing, a digitized play excerpt, or a scanned-in graph best shows their learning. Electronic portfolios usually tie student work to the district standards.

James' portfolio is typical. It starts off with his name, his grade, his picture, and an oral message recorded by him. On the next screen, he lists skills based on school standards. (It could have been district, state, or national standards.) Each of the skills he has achieved is marked and links to a screen with work samples. The next screen contains four parts that document skills learned: One section contains a description of his work, another section contains a rubric showing which aspects of the skills are demonstrated in the work

sample, and the two bottom sections of the screen are reserved for student and teacher comments. On one side are James' reflections on what and how he has learned. On the other side are his teacher's comments on the merits of the sample. Each section can scroll to show more information if needed. This four-part screen is linked back to the main skills list.

WHY USE ELECTRONIC PORTFOLIOS?

Electronic portfolios directly relate student work to the stated standards, but they have additional advantages as well.

- Portfolios demonstrate wider dimensions of learning than just paper-and-pencil reports or exercises. For example, within an electronic portfolio, a student can play a digitized tape of the most important part of his persuasive speech or show a movie of how he used math and science to help rebuild a park area.
- Various parts of electronic portfolios can be interconnected through hyperlinks. Papers and materials do not get lost or misplaced. New student work can replace older work with minimal effort. There is no need to search through a thick manila folder. (In previous years, one of James' teachers had shown me his 10-inch thick paper portfolio. I thought that was a historical accumulation of his year's work, not a carefully selected showcase of learning!)
- Electronic portfolios save space. Each student's paper portfolio documenting the K-12 years could take two filing drawers per student. Electronic portfolios can be stored on the school's network or even on an external disk such as the Zip cartridge. Students can take their electronic portfolio with them to another school or even send it to college as part of their application.

SELECTING AN ELECTRONIC PORTFOLIO PROGRAM

Our school district has evaluated many approaches to electronic portfolios: simple word processing portfolios, videotapes, Web pages, and multimedia software applications. Each has its advantages and disadvantages. Word processing portfolios are limited in functionality. While anyone can learn to use a camcorder to record student accomplishments, videotapes take considerable space to store. More often than not, most student webfolios (portfolios on the Internet) do not relate the student's work back to district goals, nor do they include an assessment or student/teacher reflection. I am not exactly sure why this is except to speculate that many educators are simply rushing to get their students' work up on the Web and may not really understand the function of a student portfolio.

Our investigation of electronic portfolios software focused on two types--software that is specifically designed for electronic portfolios and general purpose multimedia programs that can be used for electronic portfolios.

Good portfolio software should include or facilitate:

- An introduction to the portfolio
- An introduction of the student
- District goals and competencies
- Various ways to show student work
- Evaluation of student work (a rubric)
- Student reflection
- Teacher feedback
- A summary of the student's achievement

In our district, we wanted each student's work to be an example of some specific district goal or competency. After each student's work example, we wanted a description of the work sample, the rubric, the student's self-reflection, and the teacher's reflection. The Scholastic program works chronologically and is not based on competencies, so we eliminated it. The Grady program includes competencies, but does not allow flexibility in rearranging the screens, so we eliminated that as well. We soon realized that flexibility was critical in our selection of an electronic portfolio software, so we decided on a multimedia program that we could customize. We also felt that we would probably want to make changes in the electronic portfolios as we learned more about their potential. We chose HyperStudio since it is a true classic. As we looked online, we saw many examples of educators already using HyperStudio to do electronic portfolios. Some examples can be found in America Online's Electronic School House library.

COMPONENTS OF ELECTRONIC PORTFOLIOS

It is not uncommon for teachers to think only of paper-based work for electronic portfolios. It is easy to identify items to go in a student's portfolio such as English compositions and poems, math problems and tests, and science experiments, and so forth. We seldom think of the multiple dimensions of student learning. For example, students can demonstrate effective communication skills with:

- Digitized video conference clips of a real-life math solution to a problem
- Multimedia presentations explaining an interdisciplinary local pollution problem
- Digitized audio clips of a persuasive speech
- Digitized pictures of a plant growth project
- Digitized images of a student fax exchange with a scientist
- A Web page showing how to help save the rain forest through local actions

As students and teachers become more comfortable working with electronic portfolios, they will begin adding more multimedia to demonstrate the richness of their learning experiences. In the beginning, students might include text descriptions of their projects. At the next level, they might include some images or brief sound clips. At the third level, they might use multimedia to show the project more fully with many images, sounds, graphs, and so forth.

Once students have developed good electronic portfolios with a multimedia program such as HyperStudio, we could transfer the portfolios to the Web with little effort. In the

future, we may have webfolios for our graduating seniors so that they can have college admission counselors view their electronic portfolios online.

PORTFOLIO MANAGEMENT

In the Ithaca School District where I work, after the teachers have established the goals and competencies, the students decide what they will put in their portfolio to showcase their learning. In other schools, teachers strongly recommend certain works to be placed in the student portfolios. At some grade levels--especially early elementary-- teachers often help students select their portfolio work samples.

Our staff discussed many other management issues for electronic portfolios such as:

- What competencies will we include?
- At what class or grade level should we start electronic portfolios?
- Should the decision to use portfolios be made on a building or district-wide level?
- In which class should students work on completing the portfolios?
- Do students work continuously on their portfolios or do them periodically?
- Will students use a multimedia electronic portfolio template or create their own?
- How will we allow students sufficient time to select their best evidence and to reflect upon it?
- When and to whom will students present their portfolios?

An electronic portfolio should be part of the learning experience, not an add-on. Students can waste time putting information into their portfolios if there is not a strong educational basis. However, when students base their portfolios on national, state, or district goals, their work has a penetrating focus. When students spend time evaluating how well they have achieved the goals, analyzing what other goals they still have to work on and how to do so, they spend their time wisely. The electronic portfolio serves as X-ray vision to penetrate through the student's many varied, school-related activities to actual learning.

Hardware Requirements

Electronic portfolios require a multimedia computer (Pentium or PowerMac) with a microphone. A multimedia computer accepts sound and images from external sources and can digitize sounds and images as well. You'll need a large hard drive (1 GB minimum). A portable storage device such as a Zip drive is very helpful, particularly if your school does not have a network. Also, you will need a color scanner, a color digital camera, and a general purpose multimedia authoring program or an electronic portfolio program. Each class will want manila folders and crates in which to store the student work until it is digitized.

PRIDE IN LEARNING

Our son James is proud of his portfolio since it documents his learning and clearly identifies skills to work on. He knows he can show his many skills through various

media. He sees the portfolio as his personal story. He wants to show several segments over and over again to us. "Look at all the skills I worked on...."

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