Electronic Portfolios:
Blending Technology,
Accountability & Assessment

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MANY EDUCATORS STRUGGLE TO discover the proper assessment strategies for students. Systemic reform and the standards move-ment introduce clarity and accountability in assessing our students. Though proven to be efficient, standardized assessment such as multiple-choice tests often turn teachers away as they may not align with their classroom practices or accurately measure students' abilities.

Portfolio-based assessment and, more recently, the electronic portfolio have been seen as an alternative to stan-dardized tests. An e-portfolio collects student work for individual teachers to grade and critique. At first glance, standardized and individual assessment strategies create a natural conflict: The former is an efficient and powerful tool for indexing student data, while the latter validates the professional work of the teacher and displays the actual effort of the student. However, e-port-folios possess the potential to bridge these conflicting goals as they combine individual student work with standards-based assessment, while also organizing and indexing student data. This article highlights the collaboration between a public school and an educational soft-ware firm to create an e-portfolio project that would achieve these goals.

Creating E-Portfolios

Educators have long used portfolios to collect and assess student work because they demonstrate that a student has met certain learning goals or expectations. Throughout the process of creating port-folios, students are often encouraged to reflect upon and organize their learning achievements. Teachers can then offer
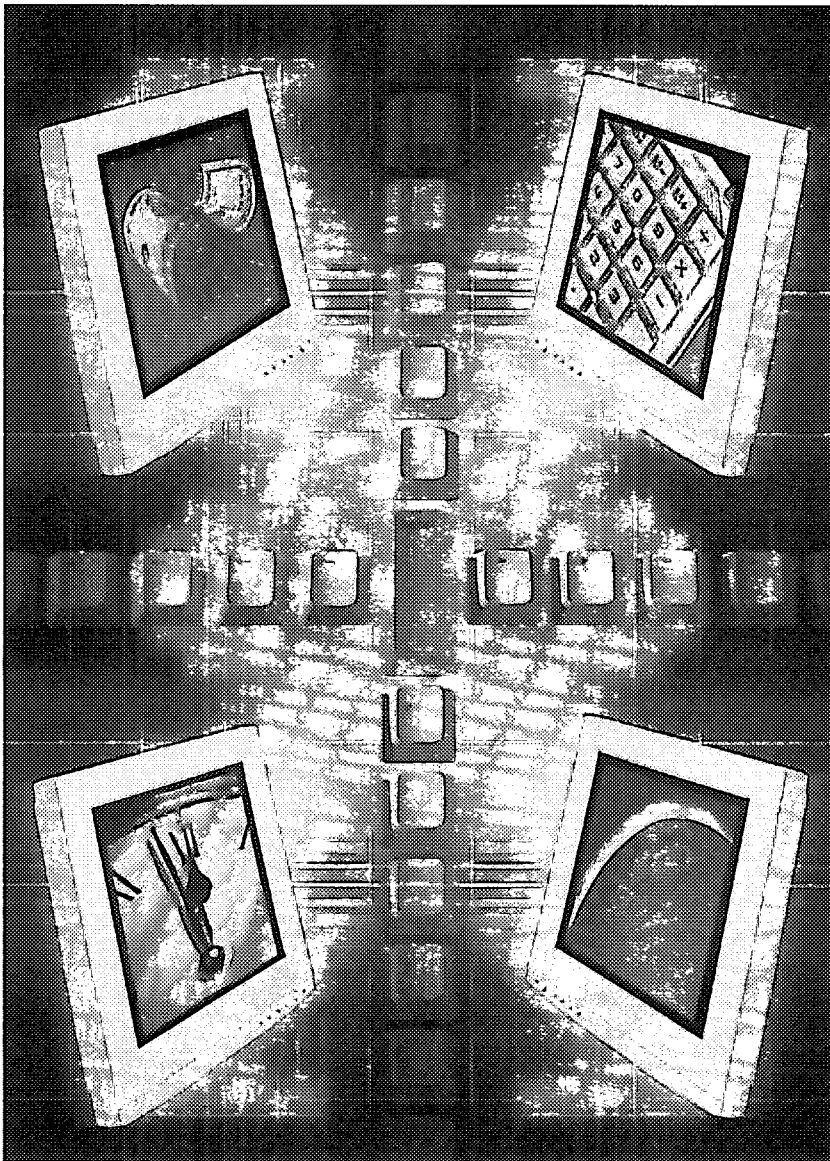
feedback on the work, providing them with further opportunities to reflect on their learning. The benefits of e-portfolios are numerous:

- The process of creating portfolios encourages the entire school community to clearly establish its learning goals and expectations.
- Students are encouraged to reflect upon their learning throughout the whole portfolio-creation process.
- Teachers have the opportunity to encourage their students and provide detailed feedback on their work.

With the development of the Internet, educators began to note the benefits of digitizing student portfolios as computing, networks and multimedia became intimately connected with communications, commerce and learning. A larger audience could now access Web-based portfolios anytime and anywhere an Internet connection existed. Digital versions of student work could be stored efficiently, providing increased access to student artifacts. Finally, converting student work into digital formats provided new and innovative ways to organize, search through and transport e-portfolios.

E-portfolios, with an increasing use in education, are still in the nascent stages of development. According to a white paper from the Electronic Portfolio Consortium: "There is not yet a coherent understanding of functional requirements, design specifications, or how and to what extent an electronic portfolio might benefit teaching and learning." However, numerous K-12 educators have piloted e-portfolio projects, and have gleaned many lessons for school and classroom use. The key for K-12 educators and e-portfolio developers is to critically examine how e-portfolios will be used in a school, and then design software that addresses those needs.

Last fall, I worked with a Rhode Island public school, the Woonsocket Area Career & Technical Center (WACTC), on its e-portfolio initiative. Taking the assessment needs of the school, I headed the development of a Web-based e-portfolio software project called eduPortfolio.org. The following sections outline our collaboration, which supported past lessons and introduced new e-portfolio possibilities.

The Planning Stage

While developing the digital portfolio project with WACTC, we spent the majority of our time and energy on the planning stage. Our first goal was to create an e-portfolio system that allowed WACTC to outline clear learning standards for its students, while simultaneously providing students with the opportunity to showcase a portfolio of exemplary work. We realized that e-portfolios provide a unique way to use educational standards for the benefit of students and teachers, while validating the individual work done in classrooms.

As a result, we designed the school's digital portfolio with a unique architecture that revolved around creating portfolio templates. This allowed schools, classrooms and districts to create specified learning standards, which they could then attach to various groups such as classrooms, schools and subject-area groupings. Students can log in to the system and attach their work to fill in the standards of a portfolio template. Working with WACTC, we found that the majority of time was spent discussing and creating schoolwide standards and portfolio templates for the students.

Previous experiences with e-portfolios showed that the planning process is a key requirement for successful portfolio projects. Administrators and teachers must explicitly outline clear structures and learning standards before students can begin to populate their portfolios with artifacts. Teachers can individually define these learning standards, or they can use public standard sets that a school decides to adopt.

In either case, creating a set of standards precedes any portfolio project, and this planning process is a vital step for any school. Standards should be used as organizational guides for student work and as the organizational structure for the portfolios themselves. With explicit learning expectations mapped out in the portfolios, students can constructively work to complete assignments that meet those requirements. Teachers will also have a clear way to assess and provide feedback for student work. E-portfolios provide an effective way to combine accountability and clarity within the fabric of each classroom.

Reflection and Feedback

As an assessment tool, e-portfolios provide an economy of scale in terms of efficiency and informational depth. Using the Internet, e-portfolios can be designed to effectively organize student work, providing ease of access to teachers, students and the general public. E-portfolios also can be designed for more intimate interaction between students, teachers and other stakeholders as they provide opportunities to view individual student work, personal reflections and detailed feedback. In addition, e-portfolios can efficiently organize and index this personalized data to allow schools to view both an individual and schoolwide picture of educational progress.

Working with WACTC, we incorporated several ideas into the assessment

tools of the software. The reflection and feedback process was very important to this portfolio project. Each student provided personal critiques for every item of work they included in their portfolio. Students were then encouraged to write about how they felt regarding the assignment, their understanding of the learning standard, and how they felt they had met the standard in their work. Teachers then logged on to the site and wrote feedback for each student's portfolio.

We decided to display teacher feedback under a student's artifact, as well as allow multiple teachers to attach feedback to a student's portfolio. Displaying a student's reflection with teacher feedback allows both students and teachers to reflect on their understandings of the learning standard. Students may also see how their understanding matched or did not match with their teachers' understandings, and vice versa. This allows for a continual process of reflection, understanding and learning.

Furthermore, multiple teachers were allowed to attach feedback to a portfolio artifact, creating an increased dialogue between teachers and students. Teachers could easily compare their assessments with each other and begin to develop rigorous interpretations of specific learning standards. Students could also view a diverse array of critiques from different teachers, which assisted them as they continued to reflect and improve upon their work. A digital portfolio system utilizes the strength of an entire learning community, connecting its understandings; creating dialogue and reflection; and, thus, building a rigorous understanding of specific learning standards.

Structure and Standards

Planning the portfolio's structure and standards was a vital part of our project.

We spent a lot of time thinking about how to structure portfolios that use learning standards in a responsible manner. As a result, the school's digital portfolio project was designed to organize portfolios around standard sets that are created by the school. This design decision implicitly guides a school through the important planning process, as it requires them to consider questions of purpose, assessment, goals and educational standards from the beginning.

The teachers at WACTC and eduPortfolio's software designers focused on the importance of individual classroom practice and student work. Standards can be used responsibly to bring organization, clarity and accountability to e-portfolios as an assessment tool. However, e-portfolios bring to the forefront the richness of student work and teacher practice. E-portfolios celebrate the body of student work, as well as show the reflection and dialogue generated between students and teachers.

The level of reflection and assessment is richer with e-portfolios because student work is displayed with their reflections, data about the learning standard, and teacher feedback. This connection of elements allows all stakeholders to continually reflect on the learning process, which is the prime advantage of e-portfolios as an assessment tool.

Long-Term Endeavor

We piloted the digital portfolio project at WACTC and quickly realized that this was a long-term endeavor, which required commitment and long-term planning. E-portfolio creation is a continual, reflective process that must become an embedded part of the school culture. The added advantage of using a long-term view of e-portfolio projects is the ability to aggregate information about your students' learning process over several years. Teachers, students and administrators need time to constantly develop and enhance their practice with e-portfolios.

Finally, this collaboration was a unique look at how educational software can be designed when educators are a part of the development process. WACTC, and many public and independent schools, wanted a portfolio tool that combined the accountability and organization of standards-based assessment with a way to showcase the talents of their students and teachers. Digital portfolios are the product of this need, pushing e-portfolios toward their potential as assessment tools that combine accountability with the richness of classroom practice.   THE

Online E-Portfolio Resources

- **"Digital Portfolios: An Enduring Promise for Enhancing Assessment"**
  (from *Technology & Learning* Magazine)
  www2.edc.org/CCT/publications_feature_summary.asp?numPubid=30
- **eduPortfolio**
  www.eduportfolio.org
- **Electronic Portfolio Consortium** (ePortConsortium)
  www.eportconsortium.org
- **"Personalizing Data With Digital Portfolios"**
  (from ASCD's Classroom Leadership Newsletter)
  www.ascd.org/publications/class_lead/200303/niguidula_3.html