

Using Electronic Portfolios for Formative/Classroom-based Assessment.

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Researching Electronic ^{port}Folios: Learning, Engagement and Collaboration through Technology

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Electronic Portfolios have been described as “the next big thing” in higher education campus computing (Young, 2002), and many colleges and universities have spent that last five years establishing electronic portfolio systems or services. The implementation of electronic portfolios in PK12 schools has not been as aggressive, perhaps due to the emphasis on the testing mandates of No Child Left Behind. Perhaps if there was a better understanding of how electronic portfolios can be used for formative assessment to improve student learning, then PK12 schools will start to adopt electronic portfolios with the same enthusiasm as their counterparts in higher education. This article will discuss portfolios in general, while indicating how electronic portfolios are beginning to define and facilitate new uses and paradigms for learning and assessment.

Portfolios and Assessment

As schools and districts around the country begin to define portfolio initiatives for their students, it is important to come to a common definition of *portfolio*. In a very basic way, a portfolio is a collection of work that a learner has collected, selected, organized, reflected upon, and presented to show understanding and growth over time: “A purposeful collection of student work that illustrates efforts, progress, and achievement in one or more areas” (Paulson, Paulson & Meyer, 1991). Additionally, a critical component of a portfolio is the combination of a learner's reflection on the individual pieces of work (often called "artifacts") as well as an overall reflection on the story that the portfolio tells.

When used in PK12 schools, reflective/formative learning portfolios have the potential to support a deeper level of engagement and self-awareness, making it easier for students to understand their own learning and to provide teachers and parents with a richer picture of what students know and are able to do, as well as their ongoing development.

One primary difference between traditional and electronic portfolios is that electronic portfolios use electronic technologies as the container (CD, DVD, WWW), allowing students to collect and organize portfolio artifacts in many media types (audio, video, graphics, and text) and to use hypertext links to organize the material, connecting evidence to appropriate outcomes, goals or standards.

In PK12 schools, the primary purposes for portfolios support both assessment *of* learning and assessment *for* learning (Stiggins, 2002). It is important to make this distinction when considering the role of portfolios in assessment. There are major differences between the use of portfolios in high stakes summative assessment *of* learning, and the powerful, robust uses of portfolios in

formative assessment (for instruction) or assessment *for* learning. The research conducted in the U.K. (Black & William, 1998) on assessment *for* learning provides firm evidence that "formative assessment is an essential component of classroom work and that its development can raise standards of achievement" more effectively than any other strategy. The Assessment Reform Group (2002a) provides this definition:

Assessment for Learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there.

In implementing portfolios used as assessment *for* learning, artifacts are selected by students to tell the story of their learning. The portfolio is maintained on an ongoing basis throughout a class, term or program. Portfolio and artifacts are reviewed with the learner and used to provide feedback to improve learning. The primary audience for a formative portfolio is the student and often their parents in student-led conferences. The focus is on formative assessment: what are the learning needs in the future? How has the learner improved over previous work? When used for formative assessment, these types of portfolios have the potential to improve student self-esteem.

In contrast, when looking at portfolios as assessment *of* learning, a student submits specific required artifacts that are mandated by the school to determine outcomes of instruction. Summative portfolios are usually developed at the end of a class, term or program. Portfolio and/or artifacts are usually "scored" based on a rubric and quantitative data is collected for external audiences. The summative portfolio is usually structured around a set of outcomes, goals or standards and is sometimes used to make high stakes decisions. Research shows that summative assessment actually reduces student motivation to learn (Assessment Reform Group, 2002b).

How do students respond to these different types of portfolios? I often tell two stories about paper portfolios: In one school district (that shall remain nameless), the students were required to set up a 3-ring notebook, put in specific sections and assignments. When a group of the students graduated from high school, they built a bonfire and burned their portfolios!

In the second story, told by Jim Mahoney in his book *Power and Portfolios: Best Practices in High School Classrooms*, a freshman English student created a wonderful writing portfolio, the kind of student-centered portfolio that Mahoney called "construction of self." It was so impressive that it was borrowed for teacher professional development, and in the process it got lost. The student was heartbroken, offered a \$50 reward for its return. It never showed up, but the student was able to reconstruct the portfolio from files saved on her home computer, and she used that experience of loss for reflection in her 10th and 11th grade year.

Here is the difference between these two stories: the purpose of the portfolios. The first example was an institution-centered, summative portfolio, where the students had little choice and ownership over the contents of their portfolio. The second example was a student-centered, formative portfolio, where the student reflected on her growth over time; the bottom line: ownership and engagement.

Implementation of Electronic Portfolios

In planning an electronic portfolio initiative, each school or district must determine the primary purpose for having students create an electronic portfolio. Because the purposes and goals for each portfolio initiative will certainly determine the content, the creation process, and the evaluation, it is important to have a clear sense of intended purpose from the start.

The second task is to select the tools that will be used to manage the electronic portfolio development process. There are a variety of tools available, from the use of “common tools” or desktop computer software such as Microsoft Office or Adobe Acrobat. These tools allow a student to publish their portfolios on CD or a local area network server. To publish portfolios on the Internet, there are two options: students become web developers (learning to create electronic portfolios with HTML editing software, such as Dreamweaver) or the school establishes their own server with a portfolio (or content management) software package or purchases an electronic portfolio service. There are both open source and commercial software and services available. Experience in higher education has shown the difficulty of supporting the “create-your-own” approach, which has led to a large number of commercial electronic portfolio services adopted.

If we are to help learners create portfolios that truly support assessment *for* learning, then we need to look at strategies that help the learner tell a story of their own learning. In the early 1990s, Pearl and Leon Paulson created a metaphor for portfolios as a tool to construct meaning. They stated, "The portfolio is a laboratory where students construct meaning from their accumulated experience." (Paulson & Paulson, 1991, p.5) They also pointed out that:

A portfolio tells a story. It is the story of knowing. Knowing about things... Knowing oneself... Knowing an audience... Portfolios are students' own stories of what they know, why they believe they know it, and why others should be of the same opinion. A portfolio is opinion backed by fact... Students prove what they know with samples of their work." (Paulson & Paulson, 1991, p.2)

More research is needed on examples of implementation that clearly differentiate between student-owned electronic portfolios and the assessment systems used to record evidence of students' progress toward meeting standards. In 2005, the author collaborated with TaskStream to create the REFLECT Initiative, a research project to study the effects that reflection and portfolio creation have on student learning and engagement. It is our hope that the REFLECT Initiative will provide this type of data.

A Systems Approach

A study of the current literature on portfolios in education leads to a new taxonomy that balances the needs of the institution for an assessment management system with the needs of learners for a reflective portfolio that supports deep learning. This new conceptual framework includes an electronic portfolio system that uses three different solutions/tools that electronically talk to each other (Barrett & Wilkerson, 2004):

1. A digital archive of learners' work
2. A learner-centered electronic portfolio "using the learner's authentic voice"
3. A central database to collect teacher-generated assessment data based on tasks and rubrics

In many ways, an integrated system with these three distinct components acts as a workflow management system to support both formative (facilitating student feedback) and summative assessment (collecting and aggregating evaluation data).

The power of a multi-faceted portfolio system lies in the fact that it provides the means for schools and districts to report on student progress, competency, and achievement while encouraging individual students to become engaged in a process that empowers them to take control of their own learning; and develop the self-awareness to articulate their own strengths, weaknesses, achievements, disappointments, learning experiences, passions, and hopes for the future. Student experience and deep learning remains equally important to the accountability expectations of No Child Left Behind. For this initiative to be truly successful, students must take ownership of their learning and be engaged in their own success.

In this type of integrated system, a student engages in learning experiences, embedded in the curriculum, that encourage them to produce work that can be stored in the digital archive (or working portfolio). These artifacts can be used as evidence of learning in two ways: in a formalized assessment system and in the learner's own portfolio. This process is interactive and reflective, connecting the artifacts with the learner's reflection that provides a rationale for using the artifact as evidence of learning. The artifacts become meaningful to the student as evidence of their own understanding and growth. At the same time, the teacher will evaluate the artifact, with the accompanying reflection, and decide if the artifact meets the guidelines of the performance task as outlined in the associated rubric. The student can then receive feedback on their work, so that they know how to improve. In addition, assessment data can be aggregated for reporting purposes. These two use cases can best be described as "portfolio as test" and "portfolio as story". Paying equal attention to both approaches will result in a more balanced assessment system that supports deep learning.

The use of technology can be a motivating factor for portfolios, especially if we can make the process engaging for the learners, and give them an opportunity to express their own voice and leave their own mark in their portfolios. As schools implement electronic portfolios, it will be important to do more than replicate their paper-based predecessors or adopt a data-base-type portfolio system that only allows students to fill in blanks on a web-based form. Where is the individuality, creativity, and ownership? To truly engage learners, I encourage schools to incorporate emerging technologies that motivate and engage adolescent students, including digital storytelling, multimedia artifacts, podcasting and blogging (maintaining a reflective online journal).

We have seen how much students are motivated to use online social networking sites, such as MySpace and FaceBook. The TaskStream electronic portfolio has been described by students participating in the REFLECT Initiative as an "academic MySpace." If only we could capture that level of motivation while furthering the goals of deep learning in formative electronic learning portfolios, then we may realize the real promise of using technology to both improve and showcase student achievement.

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