

Introduction to Electronic Assessment Portfolios

Teacher portfolios: The process of developing electronic portfolios can document evidence of teacher competencies and guide long-term professional development. The competencies may be locally defined, or linked to national teaching standards. Two primary assumptions in this process are: 1.) a portfolio is not a haphazard collection of artifacts (i.e., a scrapbook) but rather a reflective tool which demonstrates growth over time; and 2.) as we move to more standards-based teacher performance assessment, we need new tools to record and organize evidence of successful teaching, for both practicing professionals and student teachers.

Student portfolios: One of the most exciting developments in the school reform movement is the use of alternative forms of assessment to evaluate student learning, and one of the most popular forms of authentic assessment is the use of portfolios. The point of the portfolio (electronic or paper) is to provide a "richer picture" of a student's abilities, and to show growth over time. Portfolios are being developed at all phases of the life span, beginning in early childhood, through K-12 and higher education, to professional teaching portfolios. As more schools expand student access to technology, there are an increasing number of options available for developing electronic student portfolios, including relational databases, hypermedia programs, WWW pages, PDF files, and commercial proprietary programs.

Electronic portfolios: Electronic portfolio development draws on two bodies of literature: multimedia development (decide, design, develop, evaluate) (Ivers & Barron, 1998) and portfolio development (collection, selection, reflection, projection) (Danielson & Abrutyn, 1997). Both processes are complimentary and essential for effective electronic portfolio development. Understanding how these two processes fit together, along with understanding the role of standards in electronic portfolio development, will provide teachers and students with a powerful tool for demonstrating **growth over time**, which is the primary value of a portfolio.

Various Portfolio Purposes

There are three general purposes for developing portfolios: Learning (Formative) Portfolios, which usually occurs on an ongoing basis supporting professional development; Assessment (Summative) Portfolios, which usually occurs within the context of a formal evaluation process; and Employment (Marketing) Portfolios, which are used for seeking employment (Hartnell-Young & Morriss, 1999; Wolf, 1999). There are Working Portfolios, Showcase or Best Works Portfolios and Assessment Portfolios.

As noted above, portfolios can be a form of alternative assessment. The terms alternative assessment, authentic assessment, or performance-based assessment are often used synonymously "to mean variants of performance assessments that require students to generate rather than choose a response" (Herman, Aschbacher, and Winters, 1992, p. 2). The characteristics of this type of assessment are: the student is involved in meaningful performance tasks; there are clear standards and criteria for excellence; there is an emphasis on metacognition and self-evaluation; the student produces quality products and performances; there is a positive interaction between assessor and assessee (Burke, 1999). There are two central features to alternative assessments: "First, all are

viewed as *alternatives* to traditional multiple-choice, standardized achievement tests; second, all refer to direct examination of student performance on significant tasks that are relevant to life outside of school" (Worthen, 1993, p. 445).

Kay Burke (1999) and Robin Fogarty (1998) advocate a balanced approach to assessment, with a focus on three components:

Traditional Assessment, with a focus on grades and rankings, knowledge, curriculum, and skills, implemented through classroom assessments (tests, quizzes, homework assignments), and standardized tests (either norm-referenced or criterion-referenced)

Performance Assessment, with a focus on observable results and standards, application and transfer, implemented through standards, tasks, criteria and scoring rubrics.

Portfolio Assessment, with a focus on growth and development over time, implemented through selection, reflection and inspection of classwork, along with goal-setting and self-evaluation

"Performance assessment focuses on the direct observation of a student's performance" (Fogarty, 1998, p.10). Students create projects or perform tasks based on predetermined standards, criteria, and indicators, which are evaluated by scoring rubrics. Teachers have always observed student learning in the classroom. However, until recently documenting these observations has been difficult and time-consuming. In the early 1990s, several tools were developed to collect and organize these observational data; the Greater Victoria (B. C., Canada) School District developed a system using bar codes to record student classroom activities. Subsequently, the software was published by Sunburst as Learner Profile, and moved from using bar code readers, to using Apple's Newton and now Palm hand-held devices to collect data in the classroom. The most promising application of the Palm involves linking data collection to generic database applications, such as FileMaker Pro, to allow more flexible use of observational data.

There are significant differences between Performance Assessments and Portfolios. A portfolio is a container that holds examples of student or teacher work (the "artifacts") and reflections on that work that transforms the artifacts into "evidence" of achievement. Many of those artifacts could be the results of performance assessments with associated evaluations and reflections. A standards-based portfolio creates linkages between student tasks and performance assessments, with their associated scoring guides, and the standards that they are designed to demonstrate.

Benefits of Electronic Portfolio Development

Based on research into the implementation of electronic portfolios for both students and teachers since 1991, the following benefits appear to result from developing electronic portfolios with teachers and students:

1. Creating an electronic portfolio can develop teachers' as well as students' multimedia development skills. The multimedia development process usually covers the following stages:

- Decide/Assess - determining needs, goals, audience for the presentation
- Design/Plan - determining content, sequence of the presentation
- Develop - Gather and organize multimedia materials to include in the presentation
- Implement - Give the presentation
- Evaluate - Evaluate the presentation's effectiveness

2. Modeling: If teachers develop electronic teaching portfolios, their students will be more likely to have their own electronic portfolios

3. Each stage of the portfolio development process contributes to teachers' professional development and students' lifelong learning:

Collection - teachers and students learn to save artifacts that represent the successes (and "growth opportunities") in their day-to-day teaching and learning

Selection - teachers and students review and evaluate the artifacts they have saved, and identify those that demonstrate achievement of specific standards (this is where most electronic portfolios stop)

Reflection - teachers and students become reflective practitioners, evaluating their own growth over time and their achievement of the standards, as well as the gaps in their development

Projection - teachers and students compare their reflections to the standards and performance indicators, and set learning goals for the future. This is the stage that turns portfolio development into professional development and supports lifelong learning.

Presentation - teachers and students share their portfolios with their peers. This is the stage where appropriate "public" commitments can be made to encourage collaboration and commitment to professional development and lifelong learning.

Understanding how these two processes fit together, along with how standards fit into electronic portfolio development, will allow teachers and students to gain the most benefit in demonstrating the results of student learning over time, which should be the primary purpose for creating a portfolio.

Framework for the Portfolio Development Process (Based on Danielsen & Abrutyn & ASCD, 1997)

The **collection** process is the primary activity of a working portfolio. The best advice is, "Don't save everything!" (but save enough to be able to demonstrate achievement of the specific standards). The portfolio's purpose, audience and future use of artifacts will determine what is collected at this stage.

In the **selection** phase, the portfolio developer examines what has been collected to decide what should be moved to a more permanent assessment or display portfolio. The selection criteria should reflect the learning objectives that the portfolio is demonstrating.

At the **reflection** stage, portfolio developers articulate their thinking about each piece in their portfolio. Through this process of reflection, we become increasingly aware of ourselves as learners. For the novice or young learner, it may be appropriate to use reflective prompts, or open-ended questions to guide the reflections. It is recommended to include reflections on every piece plus an overall reflection on the entire portfolio.

In the **projection or direction** stage, the portfolio developers, review their reflections on their learning, taking the opportunity to look ahead and set goals for the future. At this stage, portfolio developers should see patterns in their work and use these observations to help identify goals for future learning. It is at this stage that the portfolio becomes a powerful tool for long term development.

I have added the **connection** stage to the ASCD model, since this can become a powerful motivator for long-term development. In this stage, the portfolio is presented to the appropriate audience and discussed in meaningful conversation about teaching and/or learning. (This stage may occur before or after the projection stage.) Often, appropriate "public" commitments to learning goals can encourage collaboration and commitment to professional development and lifelong learning. Also, the feedback received in this stage can lead to further goal-setting.

Robin Fogarty, Kay Burke, and Susan Belgrad (1994, 1996) have identified ten options for portfolio development, further defining the stages and increasing the quality of the portfolio process:

1. PROJECT purposes and uses
2. COLLECT and organize
3. SELECT valued artifacts
4. INTERJECT personality
5. REFLECT metacognitively
6. INSPECT and self-assess goals
7. PERFECT, evaluate, and grade (if you must)
8. CONNECT and conference
9. INJECT AND EJECT to update
10. RESPECT accomplishments and show pride

Figure 1: Portfolio Development Options

Framework for the Multimedia Development Process

The multimedia development process usually covers the following stages: Assess/Decide, Plan/Design, Develop, Implement, Evaluate.

Decide/Assess: In the first stage, in the case of a multimedia presentation, the focus is on a needs assessment of the potential audience, the presentation goals, and the tools that may be most

appropriate for the presentation context. When developing an electronic portfolio, the focus is on the audience for the portfolio, the learner goals that the portfolio should be demonstrating. These goals should follow from national, state, or local standards and their associated evaluation rubrics or performance indicators. This stage in the portfolio development process should identify and describe the assessment context.

Design/Plan: In the second stage of multimedia development, the focus is on organizing or designing the presentation. The focus is on determining audience-appropriate content and presentation sequence, constructing flowcharts, writing storyboards. This is also the time to determine audience-appropriate software, storage and presentation medium. When developing an electronic portfolio, the focus is also on describing the audience(s) for the portfolio, whether they be the student, parent, college, community, or any other stakeholder in the assessment process. Now is the time to determine content of portfolio items (by context) and the type of evidence to be collected; determine which software tools are most appropriate for the portfolio context; and determine which storage and presentation medium is most appropriate for the situation

Develop: In this third stage of multimedia development, the focus is on gathering multimedia materials to include in the presentation, organizing the materials into a sequence (or with hypermedia links) for the best presentation of the material, using an appropriate multimedia authoring program. When developing an electronic portfolio, the focus is on gathering multimedia materials that represent a learner's achievement and including those artifacts in the portfolio. This is where the artifacts can be linked to standards, preferably in a relational database. In electronic portfolio development, students also record their self-reflections on their own work and achievement of the goals/standards. Teachers record feedback on student work and achievement of goals/standards. The final part of this stage is to organize the material using hypertext links between goals/standards, student work samples, rubrics and assessments.

Implement: In this fourth stage of multimedia development, the developer gives the presentation. In electronic portfolio development, the portfolio is recorded to appropriate presentation and storage medium. The electronic portfolio is also presented to an appropriate audience, by the student in age-appropriate situations.

Evaluate: In this final stage of multimedia development, the focus is on evaluating the presentation's effectiveness. In electronic portfolio development, we not only evaluate the portfolio's effectiveness in light of its purpose and the assessment context; we also use the portfolio evidence to make instruction/learning decisions. In some cases, we may collect exemplary portfolio artifacts for comparison purposes. There are two types of evaluation: Formative Evaluation, which usually occurs on an ongoing basis, and Summative Evaluation, which usually occurs when the project is completed.

Five Stages of Electronic Portfolio Development: From the discussion of both the Multimedia Development Process and the Portfolio Development Process, along with the discussion of the appropriate technology tools, five stages of **Electronic Portfolio Development** emerge. Here are the key words from each process to address at each stage of electronic portfolio development.

Electronic Portfolio Development Stages

<i>Portfolio Development</i>	Electronic Portfolio Development	<i>Multimedia Development</i>
<i>Purpose & Audience</i>	1. Defining the Portfolio Context & Goals	<i>Decide, Assess</i>
<i>Collect Interject</i>	2. The Working Portfolio	<i>Design, Plan</i>
<i>Select, Reflect, Direct</i>	3. The Reflective Portfolio	<i>Develop</i>
<i>Inspect, Perfect, Connect</i>	4. The Connected Portfolio	<i>Implement, Evaluate</i>
<i>Respect</i>	5. The Presentation Portfolio	<i>Present, Publish</i>

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