

Title: Conflicting Paradigms and Competing Purposes in Electronic Portfolio Development*

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Abstract: The recent literature on using portfolios for high stakes assessment highlights what Green and Smyser (1995) identify as two contradictory portfolio purposes: formative and summative evaluation. This article discusses the characteristics of portfolios used for formative and summative assessment, suggesting that unless the conflicting paradigms and competing purposes underlying portfolios are recognized, their value for learning may be subverted. Electronic portfolio technologies promise support for both high-stakes assessment and deep student learning—dual purposes frequently in conflict. The authors argue for a balanced system that respects the value of the portfolio for self-assessment and life-long learning.

What is a portfolio? Artists have maintained portfolios for years, often using their collection for seeking further work, or for simply demonstrating their art; it is useful to note, however, that an artist's portfolio usually includes only a person's best work. Financial portfolios contain a comprehensive record of fiscal transactions and investment holdings that represent a person's monetary worth. This is often a summative record that paints a comprehensive picture of what is, rather than a plan of what might be in the future. By contrast, an educational portfolio contains work that a learner has collected, reflected, selected, and presented to show growth and change over time, representing an individual or organization's human capital. A critical component of an educational portfolio is the 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.

An innovation of the early 1990s, an electronic portfolio combines the use of electronic technologies to create and publish a portfolio that most likely will be read with a computer or viewed using a VCR or DVD on a television. The National Learning Infrastructure Initiative (NLII, 2003) defines an electronic portfolio as: “a collection of authentic and diverse evidence, drawn from a larger archive representing what a person or organization has learned over time on which the person or organization has reflected, and designed for presentation to one or more audiences for a particular rhetorical purpose.”

The literature suggests that portfolios can have multiple purposes (Wolf, 1999): they can be used as assessment tools to document the attainment of standards (accountability purposes), as stories of deep learning (learning purposes); and as complex resumes to highlight competencies (marketing purposes). These models are based upon paradigms that are often at odds, philosophically, with each other.

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Portfolios for Accountability

A portfolio used to document and assess the achievement of externally defined skills or competencies is based upon a positivist model. Portfolio authors are being measured against some external standard of performance, often for high-stakes purposes like graduation or certification. Portfolios are considered **products**, and are evaluated summatively to hold teacher candidates accountable for demonstrating particular levels of achievement. Assessment data from portfolios used for this purpose are aggregated to reflect the performance of a particular educational or professional organization. While administrators often implement electronic portfolios for this assessment purpose, students usually view this type of portfolio as something "done to them" rather than something they WANT to maintain as a lifelong learning tool, a point that will be discussed further.

Portfolios for Learning

A portfolio whose purpose is to foster learning and document growth over time is based upon a constructivist model. Portfolio authoring reflects the tenets of constructivism in that it allows for students to begin their learning at many different starting points; reader critique challenges the student's original insights, prompting reflection and revision (Acker, 2005). This type of portfolio is primarily a device for teacher and learner to assess skills, reflect upon one's learning, and establish new learning plans. The emphasis is on process rather than product, and assessment is formative in nature. A portfolio that is truly a story of learning is OWNED by the learner, structured by the learner, and told in the learner's own VOICE (literally and rhetorically).

Portfolios for Marketing

A portfolio assembled to showcase one's best work for employment or other promotional purposes is primarily a marketing device. Though learning may result from the effort, and the portfolio can be used for assessment, this type of portfolio is not well-adapted for either purpose—audience concerns inhibit the portfolio author from reflecting honestly on his or her work and the selective nature of the evidence limits the portfolio's value as an accurate measure of the candidate's true level of skill or knowledge.

In talking about portfolios, we must be careful to distinguish the type of portfolio we're referring to. These multiple purposes can quite literally be described with two different metaphors. American poet John Godfrey Saxe (1816-1887) based his poem, "The Blind Men and the Elephant" on a fable which was told in India many years ago. Each blind man touches a different part of the elephant and describes something very different, based on what he can physically touch. This fable correlates to the current understanding of portfolios: we understand the purposes for which we have direct experience. One further example is the many words that exist in the Eskimo language to represent our single word, *snow*. Those who don't live in that environment tend to see it all as the same cold white stuff; the same can be said for those who have a superficial understanding of *portfolios*. Not all portfolios are the same— an adjective must be used to describe the

purpose for implementation since these purposes are founded on different paradigms and result in portfolios with rather different characteristics. The lack of a common understanding for what a portfolio actually *is* makes it difficult for those who seek to research electronic portfolios or make wise decisions about their use.

Effects of Conflicting Paradigms and Purposes

Although there has not been a great deal of empirical research on portfolios in general, or electronic portfolios in particular, we do have evidence that trying to achieve these multiple purposes can be problematic. The conflict is especially detrimental when one seeks to use the portfolio for learning purposes, yet tells portfolio authors that their portfolios will also be used for high-stakes assessment or as a device for obtaining a job.

Case study research by one of the authors (Carney, 2001) revealed that participants' conception of portfolio purpose, which generally implies quite different audiences of readers, impacts portfolio form and content significantly. Participants in this study—six preservice teachers, three of whom used traditional paper format and three who authored an electronic portfolio for presentation on the Web or CD—indicated grave concerns about revealing the weaknesses of their novice teaching practice and reflecting honestly on those mistakes because they had been told their portfolios would be used for two high-stakes purposes: to assess skills and competencies for a Masters in Teaching degree and to present oneself to a prospective employer. All of the participants who embraced these multiple purposes reported withholding particular items that might be problematic and avoiding candid discussion of issues that arose during student teaching.

Carney's findings also indicate that authors' sense of ownership and satisfaction with their portfolio is related to the degree to which they were able to communicate an honest sense of self in it.

Research by Placier, Fitzgerald & Hall (2001) and Barrett (2002) finds similar evidence of this conflict in paradigms. When portfolios are used for accountability purposes, to document preservice teachers' achievement of standards-based competencies, teacher candidates viewed their portfolios as a hoop they needed to jump through to graduate, and not the lifelong reflective tool that had been envisioned. Placier et. al. document students' negative attitudes toward a standards-based portfolio.

In the name of assessment (i.e., accountability) are we losing a powerful tool to support deep learning? Are we losing the "stories" in e-portfolios in favor of a skills checklist? The e-Portfolio has been defined as a "digital representation of self on characteristics of interest to a community" (Acker, 2005). We ought to consider whether particular electronic portfolios allow authors to honestly represent self.

Lee Teitel, et. al. (1998) have argued,

"Portfolio development should be a "bottom-up," voluntary process that is owned by teachers and not used for evaluation purposes. The best way to

kill it would be to make it mandatory or to use it for evaluation. Key benefits are lost if the reflective culture of professional development is replaced by a “culture of compliance” –where teachers go through the motions of assembling materials according to a predated checklist."

What are the key benefits of portfolios and to what extent can they be used both for assessment and learning?

Electronic Portfolios for Assessment and Learning

Portfolios, as they were originally conceived, support an environment of reflection and collaboration. John Zubizarreta (2004), in his insightful book on *Learning Portfolios in Higher Education*, describes the primary motive of a portfolio: “to improve student learning by providing a structure for students to reflect systematically over time on the learning process and to develop the aptitudes, skills and habits that come from critical reflection.” (p.15)

How do portfolios structure systematic reflection and learning over time? Hertels (2004) suggests it is by involving students in the assessment process:

Portfolios involve students in the assessment process: managing and monitoring their learning in both the cognitive and affective domains, documenting their progress and achievement over time, articulating their achievement levels, and more importantly, experiencing success. Portfolios also encourage students to embark on the cycle of lifelong learning”(p. 108).

Many of our assessment tools are focused on product, providing summative measures of performance, but giving little information teachers and students might use to enhance their learning activities. Portfolios, on the other hand, emphasize process—they provide *formative* assessment information that is of use for identifying gaps in one’s knowledge, transforming those gaps into new objectives, selecting appropriate learning activities, and developing self-assessment strategies for continuing growth. As Hertels notes, portfolios do this “in a process that helps embed the knowledge, put it into a context, and give the student more ownership and control” (p. 108).

If used for formative assessment purposes, rather than summative evaluation, portfolios can be powerful devices for learning. What do we mean by *formative assessment*? Formative assessment has as its primary purpose the promotion of learning. Information gained through this type of assessment is used by either teachers or students to modify learning activities. Portfolios are a type of formative assessment when they include active feedback that enables students to change or improve their work as they build up their portfolios (Black & Wiliam, 2005).

Assessment of Learning or Assessment for Learning?

Empirical evidence suggests that formative assessment is key to learning. After reviewing more than 250 articles by researchers from several countries, Black & Wiliam, (1998) concluded: “All these studies show that innovations that include strengthening the practice of formative assessment produce significant and often substantial learning gains. These studies range over age groups from 5-year-olds to university undergraduates, across several school subjects, and over several countries”(p. 139). Black & Wiliam further note that improvements in formative assessment raised student achievement more than any other educational initiative reviewed.

In subsequent work, Black & Wiliam (2005) reported that self-assessment and peer assessment are crucial aspects of formative assessment. Peer assessment is an important factor in helping students develop the essential skills required for self assessment. They cite Sadler’s (1989) claim that self-assessment is essential for learning, because in order to reach a learning goal, students must understand the goal and assess what they need to do to reach it.

Learning portfolios provide structure for students to continuously assess their own learning and receive feedback from others. There is a great deal of difference between the use of portfolios in high stakes assessment *of* learning, and the powerful, robust uses of portfolios in formative assessment — that is, assessment *for* learning, a distinction made by Stiggins (2002).

The Assessment Reform Group (QCA, 2002) provides this definition of *assessment for learning (AFL)*:

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.

The ten research-based principles of Assessment for Learning (AFL) suggest how formative assessment ought to guide classroom practice: AFL should...

- be part of effective planning of teaching and learning
- focus on how students learn
- be recognized as central to classroom practice
- be regarded as a key professional skill for teachers
- be sensitive and constructive because any assessment has an emotional impact
- take account of the importance of (and foster) learner motivation
- promote commitment to learning goals and a shared understanding of the criteria by which they are assessed
- develop learners’ capacity for self-assessment so that they can become reflective and self-managing
- recognize the full range of achievements of all learners
- give learners constructive guidance about how to improve

How does Assessment for Learning relate to electronic portfolios? To be effectively used to support assessment for learning, electronic portfolios need to support the learner's ongoing learning. Barrett (2004b) compares electronic portfolios used as assessment of learning with those that support assessment for learning.

Portfolios used for Summative Assessment of Learning	Portfolios that support Formative Assessment for Learning
Purpose of portfolio prescribed by institution	Purpose of portfolio agreed upon with learner
Artifacts mandated by institution to determine outcomes of instruction	Artifacts selected by learner to tell the story of their learning
Portfolio usually developed at the end of a class, term or program - time limited	Portfolio maintained on an ongoing basis throughout the class, term or program - time flexible
Portfolio and/or artifacts usually "scored" based on a rubric and quantitative data is collected for external audiences	Portfolio and artifacts reviewed with learner and used to provide feedback to improve learning
Portfolio is usually structured around a set of outcomes, goals or standards	Portfolio organization is determined by learner or negotiated with mentor/advisor/teacher
Sometimes used to make high stakes decisions	Rarely used for high stakes decisions
Summative - what has been learned to date? (Past to present)	Formative - what are the learning needs in the future? (Present to future)
Requires Extrinsic motivation	Fosters Intrinsic motivation - engages the learner
Audience: external - little choice	Audience: learner, family, friends - learner can choose

Features of the software used for authoring electronic portfolios can determine whether the portfolio will be primarily a summative or formative assessment device.

The Impact of Electronic Portfolio Software

Gibson & Barrett (2002) note that software for authoring electronic portfolios are of two main types: 1) off-the-shelf tools used for web page and multimedia authoring (i.e., Dreamweaver, FrontPage, PhotoShop, Adobe Acrobat, etc.); and, 2) server-based customized systems that rely on specially-designed software and databases (i.e., LiveText, Chalk & Wire, etc). Many of these server-based commercial tools that have come to market in the last five years claim to answer the accountability needs of institutions, promising support for student portfolios AND aggregated assessment data to meet accreditation reporting requirements.

Our analysis suggests there are enormous challenges in trying to meet these two diverse needs with a single product, for the two purposes imply different paradigms, which, by their very nature are often in conflict with each other.

A portfolio that closely emulates a paper version and just happens to be stored in an electronic container is a very different document from one that is part of an online database system, a system that focuses on portfolios as a means to conduct high stakes

evaluations. In fact, some commercial software systems should really be called “assessment management systems” rather than “electronic portfolios.”

Barrett (2004a) defined the differences between electronic portfolios and online assessment systems:

	Electronic Portfolio	Assessment Management System
Purpose	- Multiple purposes: Learning, Assessment, Employment	- Single purpose: Formative and Summative Assessment
Data Structure	- Data structure varies with the tools used to create the portfolio; most often common data formats (documents often converted to HTML, PDF)	- Data structure most often uses a relational database to record, report data
Type of Data	- Primary type of data: qualitative	- Primary type of data: qualitative and quantitative
Data Storage	- Data storage in multiple options: CD-ROM, videotape, DVD, WWW server, LAN	- Data storage primarily on LAN or on secure WWW server
Control of design & links	- Visual design and hyperlinks most often under control of portfolio developer	- Visual design and hyperlinks most often controlled by database structure
Locus of control	- Student-centered	- Institution-centered
Selection of Contents	- Artifacts selected by portfolio developer	- Artifacts prescribed by institution
Technology skills required	- More advanced skills required, including information design through hyper linking, digital publishing strategies, file management	- Minimal skills required, equivalent to using a web browser and adding attachments to an e-mail message
Technology competency demonstrated	Medium to high, depending on tools used to create portfolio	- Low to medium, depending on the sophistication of the artifacts added to the portfolio

Why is it important to differentiate between electronic portfolios and assessment management systems? The literature on paper-based portfolios has raised many issues and cautions about portfolio use (Lucas, 1992): the weakening of effect through careless imitation; the failure of research to validate the pedagogy; and the co-option by large-scale external testing programs. The current trend toward online assessment management systems that are being called electronic portfolios leads to further confusion in the literature, making it difficult for research to validate the pedagogy.

Many of the assessment portfolio solutions that have been put in place are based upon a positivist model and focus primarily on administrators' needs for assessment data that can be aggregated. In the name of accountability, are we losing a powerful tool to support deep learning? Are we losing the "stories" in e-portfolios in favor of the skills checklists?

Portfolios should support an environment of reflection and collaboration. It is a rare system that supports those multiple needs. Three interconnected systems are actually needed: an archive of student work, an assessment management system to document achievement of standards, and an authoring environment where students can construct their own electronic portfolios and reflective, digital stories of learning. (Barrett & Wilkerson, 2004)

Electronic Portfolios for Formative and Summative Assessment

How do we match the needs of the institution for valid and reliable data for accreditation and accountability while still meeting the needs of learners for formative assessment to enhance and support the learning process? In order to approach a balanced solution, we must envision a solution that makes it easy for students to maintain their own digital archive of work, where they can capture a large number of examples and add their reflections and notes in an ongoing way. Students can then draw from the same collection of evidence as they respond to and create multiple portfolios.

Conflicting paradigms require a multi-faceted system, one that allows a learner to build a meta-tagged digital archive of artifacts, one that helps a portfolio author build a learner-centered constructivist portfolio using those artifacts, and another that lets an institution collect the assessment data that meets their accountability requirements.

How do we create an institution-centered assessment and accountability system without losing the power of the portfolio as a student-centered tool for lifelong learning and professional development? How do we teach sound assessment practices based on established performance expectations? How do we maintain the authenticity of the portfolio process?

How can we address needs for portfolio assessment and learning?

Formative and summative assessments have quite different purposes, and our experience of the harmful influence of high-stakes summative testing on teaching and learning can make us wish to keep the two entirely apart. However, it is unrealistic to expect such a separation. The key to using portfolios for both purposes is to recognize the conflicting paradigms and purposes underlying each, and to devise a balanced electronic portfolio system for assessment and learning.

A Balanced Electronic Portfolio System

After much study of the literature and discussion with other colleagues, Barrett and Wilkerson (2004) devised a new taxonomy that balances the needs of the institution for an assessment management system while meeting the needs of learners for a reflective portfolio that supports deep learning. The conceptual framework in Figure 1 below describes an electronic portfolio system composed of three different systems:

- A digital archive of learners' work
- A learner-centered electronic portfolio "using the learner's authentic voice"
- An institution-centered database to collect faculty-generated assessment data based on tasks and rubrics.

Software enables these three different parts to talk to each other electronically.

Why keep the learner's portfolio separate from the institution's assessment management system?

Barrett (2004b) has identified factors requiring that portfolios be maintained separately from an institution's assessment system. The following essential portfolio features are currently not supported by most server-based tools:

- **Learner Ownership and Engagement with Portfolio** - The tools should allow the learner to feel in control of the process, including the "look and feel" of the portfolio. Kathleen Blake Yancey (2002) has stated her belief that learners should be the "information architects" of their own portfolios. Carney (2001) notes that electronic portfolios are often not just literal representations of self—authors use off-the-shelf authoring tools to create a *metaphorical* representation of self. In reading the portfolio, the audience actually experiences something of the preservice teachers' pedagogy.

A video conference about the MNSCU eFolio study (2005) provides further support for learner ownership. Peter Rees-Jones of Leeds University reports: "It is clear that there is a relationship between where people have a sense of ownership and the success of an e-portfolio project. Where people have that sense of ownership they do engage with it [the portfolio] and they will use it regularly."

- **Emotional Connection** - There is an affective component of the portfolio development process that supports deep learning. Barbara Cambridge (2004) said *deep learning* involves reflection, is developmental, is integrative, is self-directive, and is lifelong. Portfolios support all of these characteristics by engaging authors in creating a representation of self. Given sufficient ownership of process and product, portfolio authors find this task emotionally satisfying.
- **Learner's Authentic Voice** -As learners create their own electronic portfolios, their unique "voice" should be evident from navigating the portfolios and reading the reflections on the screen. The Northwest Regional Education Lab defines Voice (within its [6+1 Trait® Writing Model](#)) as:

"...the personality of the writer coming through on the page. It is what gives the writing a sense of flavor, a uniqueness, and gives the reader the feeling that the writer is talking directly to her. A strong sense of voice demands that the writer make a commitment to the writing and write honestly with conviction. In a paper with strong voice, the reader will get a sense that someone real is there on the page, whether the reader knows the writer or not."

In an electronic portfolio, the ability to add multimedia elements expands the definition of "voice" within that rhetorical construct.

- **Portfolio as Story** - Leon and Pearl Paulson (1991) have stated, "Portfolios tell a story...put in anything that helps to tell that story." Learners' portfolios enable

them to tell a story about their growth and development over time. Storytelling is a natural method for reflecting on new experiences (McDrury & Alterio, 2003).

- **Portfolio as Lifelong Learning/ Professional Development Tool** - The tools used to develop the portfolio should be accessible to a learner throughout his or her chosen career. The electronic portfolio development process should help students build the skills necessary to maintain their e-portfolio as a lifelong professional development tool.
- **Constructivist model supports deep learning** - As the experience at Portland State University (Patton, 2003) has found, hyperlinking leads to metacognition, which leads to deeper learning. Whenever possible, learners should have the opportunity to actively connect elements of their knowledge, consider how artifacts of learning reflect their values and goals, assess their own learning, receive feedback from members of a learning community, and formulate new learning goals.

Conclusion

Electronic portfolios can be powerful tools for learning if they are part of a balanced system of assessment *of* and *for* learning. Technology can support such a system if we recognize conflicting paradigms and actively design program requirements and software to differentiate the competing purposes of summative and formative assessment.

The question of portfolio ownership in all of its facets—psychological, legal, philosophical—will also need to be addressed by the education community so that we can best use this tool to meet pedagogical and institutional goals. Who owns the portfolios? Will it be learners who develop the contents, reflect on the meaning, and construct their own stories of deep learning—or the institutions that host these portfolios and use the data for accreditation and accountability purposes? Until we clearly articulate and resolve some of these critical issues, we will continue to confuse our purposes and dilute the potential effectiveness of the electronic portfolio to support lifelong learning.

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