Considerations in the Implementation of Electronic Portfolios

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Abstract

Early adopters of electronic portfolios in various higher education programs have used them for multiple purposes in teacher and administrator pre-service education. In this paper, we considered how electronic portfolios fit within the larger framework of principal preparation, described decisions about the structure and content, various purposes, assessment concerns, and other issues for faculty thinking of adopting these portfolios in educational administration programs. We described some of the issues related to using portfolios for multiple purposes and some of the practical considerations that influence adoption. Finally we discussed unintended consequences that may result and make recommendations for faculty contemplating the adoption of electronic portfolios.
Considerations in the Implementation of Electronic Portfolios

Two years following the publication of *A Nation at Risk*, launching the accountability reform era, the National Commission on Excellence in Educational Administration (NCEEA) issued a report bringing attention to educational leadership preparation. Among the deficiencies listed in the report, preparation programs were criticized for a lack of curricular relevance, curricular alignment, and clinical experiences (Jackson & Kelley, 2002). Great strides have been made in how school leaders are prepared (Grogan & Andrews, 2002). Nevertheless, in the words of the Executive Director of the University Council for Educational Administration, “the development of a knowledge base around leadership preparation requires widespread involvement, both in terms of its development and in its implementation” (Young, 2004, p. 1). Furthermore, an understanding about evaluating the pedagogy of administrator preparation programs needs to further evolve. These best-practice approaches in educational leadership preparation include: problem-based learning, development of cohorts, collaborative partnerships with school districts, meaningful field experiences, and the harnessing of technology to connect the student, content, and instructor (Jackson & Kelley, 2002; Browne-Ferrigno, 2003).

In regard to understanding how to evaluate leadership preparation programs, the National Policy Board for Educational Administration (NPBEA) (2002) provided program standards for educational leadership programs. These standards address program content in terms that convey the expectation that students have the capability to
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apply this content knowledge in the development, integration, and practice of professional skills (NPBEA, 2002, p. 9). The board further stated:

Because life in schools is not compartmentalized as are content areas for convenience of instruction, teaching for application of knowledge requires structures that provide transitions form isolated, specialized concepts toward a more realistic, interconnected patterns.” (NPBEA, 2002, p. 9)

The need to (1) facilitate students’ abilities to integrate learning from separate courses in a program of study and apply the knowledge appropriately to a given context as well as (2) establish a means of evaluating students’ capabilities to apply appropriately this integrated knowledge has created a challenge for many programs. The purpose of this paper is to explore the concept of using an electronic portfolio system on a program-wide basis to both facilitate the student’s integration of content and provide a means of evaluating progress of this integration as the student matriculates.

Introduction to Portfolios

Paper portfolios that document student work appear to be common in a variety of educational programs and teacher training programs, and increasingly recommended for and adopted by educational leadership programs. In some cases, the portfolio has been used primarily as a repository for documents related to student work. In other cases, the portfolio has been used as a summative assessment tool. For example, at Auburn University, it is reported that a student portfolio has replaced the comprehensive examination aimed to document both “professional growth and achieved competencies” (Meadows, Dyal and Wright,1998, p. 95). Others have advocated for or reported on the paper portfolio as well (e.g., Wilmore and Erlandson, 1995).
Within the last 10 years, considerable attention has focused on the use of electronic formats for portfolios. The American Association of Higher Education has been actively engaged in planning for electronic portfolios as a means of assessment and has published a book and maintains a web site with links to information on electronic portfolios in higher education. Some educational administration programs report moving to electronic portfolios (McCown, Eakin, & Dusenbery, 1997; Morgan, Hertzog & Gibbs, 2002, Testerman and Hall, 2001). A recent sign of the explosive growth of portfolios beyond the education community is that the technology community is developing interoperability specifications to enable electronic portfolio portability between systems (IMS Global Learning Consortium, 2004). These indicators suggest that the time is ripe for the spread of electronic portfolios in principal preparation.

The Electronic Portfolio

The essence of any portfolio is that it is an organized collection of work produced by the author. In the electronic or digital portfolios this work is stored in digital format, and accessible through either the Internet or a portable electronic storage device, such as a CD. In addition to the types of documents and pictures that could be placed in a paper portfolio, electronic portfolios allow enhancements such as video clips, links to other media, multiple connections through hyperlinking, and other digital features illustrating the author’s accomplishments.

Batson (2002) argues that electronic portfolios have evolved because a new norm of work is emerging as the result of the intersection of three trends. First, student work is now already in electronic format (although they often print it before submitting it to an instructor). Second, access to the Internet is becoming universal. Third, Web-based
databases allow students to manage large amounts of their work. Electronic portfolios take advantage of these trends.

The digital format provides a number of advantages over the paper format. Duplication of materials is simple and cheap. Unlike the bulky portfolios contained in three-ring binders, the electronic portfolio can be distributed with a few mouse clicks by providing a URL to an Internet server hosting the materials, or by distributing a CD. Faculty can retain copies of the portfolios at little cost and without storing space-consuming binders. Access is facilitated as faculty and students can retrieve the portfolios at anytime through the internet or via a CD. A student need not wait for a faculty member to return a physical document before being able to edit it, and there is no chance that a faculty member will misplace student work. This flexibility allows the author to update the portfolio quickly and easily, adding and revising documents, and removing outdated material. The author can use hyperlinks to enhance connections between the artifacts in the portfolio and to connect artifacts to program or professional standards. This allows a reviewer to maneuver as quickly and easily through a well-organized portfolio as through any web-site. The author may use graphics, animation, voice-over, hyperlinks, and scanned images to enhance information in the portfolio as well as its attractiveness. Finally, as noted above, today’s students are technology-users and it is likely that they create much of their work in electronic format (e.g., word-processed documents, presentations, spreadsheets, and databases). Storing and retrieving this information electronically is not only easier than printing it out, but in the case of many electronic files, has more fidelity to the original work. A spreadsheet file attached to an electronic portfolio for review provides a truer picture of a student’s capabilities.
than a printout of the data. The electronic form provides these practical advantages for both students and faculty.

The Portfolio Reveals a Definition of Leadership.

The electronic portfolio is a tool as well as a product. It is a tool used to communicate as well as develop concepts. It is a product that tells a story from an organized collection of artifacts. One of the underlying questions about portfolio adoption is: whose story is told? Decisions about the portfolio reveal the answers. Lee Shulman (1998) speaking of teacher paper portfolios, states:

. . . a portfolio is a theoretical act. By this I mean that every time you design, organize, or create in your teacher education program a template, a framework, or a mode for a teaching portfolio, you are engaged in an act of theory. Your theory of teaching will determine a reasonable portfolio entry. What is declared worth documenting, worth reflecting on, what is deemed to be portfolio-worthy, is a theoretical act (p. 24).

The same observation applies to electronic portfolios in educational administration. What is included in a portfolio provides a definition of leadership. Decisions to include some artifacts and exclude others manifest a belief about leadership. Decisions to use technology as the tool for creating portfolios also reflect a position about what is important. Whether in paper or electronic format, then, the portfolio represents a theory of educational administration. The directions given to students about creating a portfolio represents a theory of pedagogy as well: how do students in educational administration programs learn to become school leaders? The decisions about portfolios that bear on these theories of leadership and learning include: a) What is the broad
structure and specific required contents of the portfolio? b) For what purposes are the portfolios designed: to show growth over time or to demonstrate accomplished behaviors? c) Will the portfolio be designed to show a coherent and aligned body of student work demonstrating program outcomes, to show work from specific classes, or used in an ad hoc manner by individual course instructors?

Structure and Contents

One of the most fundamental decisions is who decides the contents and structure of the portfolio—faculty or student. When faculty define what the leadership portfolio by stating the requirements for what will be included they reveal not only a belief about leadership (what artifacts demonstrate it) but a belief about pedagogy (who controls learning?). For example, faculty at one leadership program may define leadership by using the ISLCC/ELCC standards and design a portfolio structure that includes specific assignments keyed to the standards. This implies a vision of leadership that can be achieved through the meeting of specified standards, and, conversely, that cannot be achieved without meeting those standards. Another faculty may take a constructivist view, asking students to construct a portfolio of their own design, including artifacts that they (the students) believe represent their leadership, without reference to a pre-determined set of standards. This reflects a theory of leadership that is more personal, flexible and open to individual interpretation and a pedagogy that is constructivist. The student-constructed portfolio furnishes information about the student’s conception of leadership. If a student chooses to represent leadership featuring in the portfolio, a school budget, a school crisis management plan, and master schedule that she worked on, the student’s preference for building management versus instruction-focused leadership
provide as telling a comment on her view of leadership as any reflection or summary she would write. A faculty-constructed structure would not reveal this.

Practical concerns affect these decisions. The technology skills needed to construct a portfolio vary depending on whether a commercial portfolio-building tool is selected or whether students are expected to build their own web pages with an html editor. The commercial tool provides a structure, and the template can be created by faculty, so that students fill in the specified slots with their work. Conversely, faculty can provide no template, letting students create the portfolio. In doing so, they increase the degree of technology skill necessary. Rather than filling in designated places with specific artifacts, the student must learn to create the structure of the portfolio as well as upload the artifacts. In turn, this decision affects learning in that the time required to learn the requisite technology skills (Canada, 2002), and affords less time to learn substantive content of the curriculum. Moreover, as will be discussed below, the decisions about structure and content may affect reliability and validity for assessment.

Purposes

Questions about locus of control are related to decisions about the purposes of the portfolio. Wolf and Dietz (1997) and others describe three categories of portfolio, based on the author’s purpose: the learning portfolio, the assessment portfolio and the employment portfolio. The employment portfolio is intended to persuade potential employers of the author’s capabilities and suitability for a particular position (Carroll, Pothoff & Huber, 1996) although recent evidence indicates this promise has yet to be realized with electronic portfolios (Theel & Tallerico, 2004; Painter & Wetzel, forthcoming). In this article we focus on the learning and assessment portfolios.
The learning portfolio

The learning portfolio is intended to promote self-growth through reflection. An early proponent of learning portfolios (paper format) in teacher education, Lee Shulman, stated that the portfolio becomes a record of development as the author adds a series of self-selected artifacts, explains what they represent, and reflects on them, indicating what has been learned (Shulman, 1998). Under this model, written reflection is an integral part of the portfolio. Through the process of reviewing their work, selecting representative artifacts for their electronic portfolios, and explaining what the artifacts represent about their professional growth, students can show how their knowledge and skills have increased over time (Wolf & Dietz 1998). Faculty who prepare educational leaders have recognized the importance of reflection as well (e.g., Hart, 1993, Schon, 1991; Short, 1997). A learning portfolio is not a showcase of best work (a destination achieved) but a record of the journey that promotes the author’s insight, understanding, and growth. Dixon and Dixon (2002) described this type of portfolio as formative. It is intended to help the student develop concepts of successful performance through setting goals, reviewing and reflecting on their work.

These artifacts represent early attempts to practice new skills and student growth over time. A teacher’s learning portfolio may contain lesson plans and the teacher’s reflections on the implementation of those plans. An educational administration portfolio may be constructed this way as well. If the topic is instructional supervision, the observed teacher’s lesson plan, the student’s analysis of the lesson, plan for the conference and a video of the student conducting a post-observation conference can be included. The student’s reflection could be written, but it could also be a voice over during the
conference, explaining the purpose of certain questions asked of the teacher, or an
assessment of how a particular strategy worked in the post-conference. Thus the
instructor sees the conference on video, hears the student reflect on the essential elements
of the conference, and can provide relevant feedback in an electronic message attached to
the portfolio. Such a method provides a means to identifying tacit assumptions held by
the student and makes them explicit, allowing questioning to occur (Argyris, 1993). Such
an artifact allows the student to demonstrate growth in instructional supervision skills,
while providing a means toward facilitating the growth. By including video of
subsequent observations of the same teacher, a continuous source of longitudinal
information is provided facilitating the student’s questioning of assumptions and a means
of self-evaluation. Written reflections on the artifacts can spur conceptual understanding
of the standards in practice.

Students may also include in their electronic portfolios any number of resource
links for their own future reference. These may include links to web sites that contain
pertinent information, bibliographic references, scanned articles or lecture notes, and so
forth. As students decide what to include in a learning portfolio, they develop their
understanding of the concepts addressed. The task of defining the administrative
competency becomes more personal. The artifacts in the portfolio reflect the student’s
growth in administrative skill. The electronic format allows for storage of large numbers
of documents, easy retrieval, and hyperlinked connections between artifacts to show how
the author perceives a connected web of understandings about leadership.

*The Assessment Portfolio*
The other primary purpose is assessment: to demonstrate competence in a
certain course, or for licensure and/or graduation. Here, artifacts are selected for the
express purpose of demonstrating that a minimum standard of performance has been met.
This assumes a certain standard and criteria for judging competence. For these purposes,
the author’s selections are not intended to show growth over time, but to convince the
reviewer that the work meets the standard. The portfolio allows reviewers to look at
samples of authentic performance that provide a broader, more contextual look at a
student’s accomplishments than is afforded by tests, essays or reports. This purpose
provides a different set of incentives for students. Just as the learning portfolio
demonstrates the student’s evolving definition of educational leadership, in the
assessment portfolio the student must bridge his or her evolving definition to the
definition imposed by the instructor. As such, the concept of leadership or
accomplishment is externally imposed shifting the locus of control away from the student
and toward the faculty.

An assessment portfolio may be either a summative portfolio, presenting a body
of student work for one overall assessment, often with high stakes decisions attached
(e.g., graduation or credentialing). Or it may be a collected body of works; assignments
submitted and judged at different points in a program. To use a literary analogy, the
portfolio may be single work or a collection of essays, each independently reviewed. A
portfolio may also represent work from a single class or experience (for example, an
internship), from a series of classes, or encompass an entire program.

One use to which an electronic portfolio appears particularly well-suited is that of
a program-wide portfolio containing key artifacts from individual classes. Thus a
portfolio is structured to include a specified number of documents from particular classes. In a principal leadership program, there may be a number of required elements that include (as examples) the following:

- Analysis of a school’s student assessment data with recommendations for priority areas for future change (from a course in Assessment)
- Analysis of possible reform initiatives to address the findings from the assessment data (from a course in Research)
- A video of the student leading a meeting with a high school department in their analysis of the data and plan for improvement (from a course in School Reform)

Each of these pieces may be submitted and graded independently with the evaluation linked to the course grade. Each may be linked to a set of standards or program outcomes that form the basis for an end-of-program assessment. The artifacts are placed in a portfolio that provides electronic tools for the development and transmission of the artifacts, a means to link the related elements together, communication between the instructor and student, and a repository for student work. Using an electronic portfolio across the program provides a way of viewing and evaluating program alignment, the student’s integration of course work, and the level of theory to practice synthesis occurring in course work and field experiences. It provides a clear audit of student awareness, understanding and capability (NPBEA, 2002).

Difficulties of using portfolios for high stakes assessment

Assessment portfolios may be low stakes or high stakes. High stakes portfolios would be those that provide definitive evidence for a high stakes decisions such as
graduation or licensure. Low stakes portfolios would be those that contribute evidence toward these decisions, but are not the sole basis for them. As the stakes become higher, more concern emerges with respect to the reliability and validity of portfolio assessment processes (Doolittle, 1994).

Wilkerson and Lang (2004) argue that in states where graduation from a teacher program is tantamount to obtaining certification institutions may incur liability if they fail to use psychometrically defensible bases for the graduation decision. They contend that institutions could face legal challenges if they use portfolios that are not based on best principles of test construction, including evidence of validity, reliability and fairness. This has direct implications for the decisions about purpose, content and locus of control of both paper and electronic portfolios.

Allowing candidates to choose artifacts can skew the assessment. Candidates can ignore failures and present infomercials about themselves. Some standardization of contents is needed so that results are comparable (Arter, Spandel and Culham, 1995). Wilkerson and Lang (2004) point out that the decision as to whether a prospective teacher has achieved minimal competency is one that requires a minimum level of performance in all the standards for licensure. By analogy, leadership faculty must determine whether meeting all program standards is required for graduation. If so, student-constructed portfolios may be still be used, but students must be clearly instructed that documentation must be provided for all the standards. This suggests that a continuum exists with respect to locus of control for the portfolio. On one end, students have complete control over the contents and a portrait of their conceptions of leadership emerges from their decisions about what to include. This makes the portfolio potentially more interesting and self-
revealatory, but concomitantly more difficult to assess against a set of standards for a high-stakes decision. On the other end of the continuum, a highly structured portfolio with contents required by faculty, may mask significant differences in students, but makes assessment more defensible as the prescribed contents are matched to a set of standards and students are informed about the link between content, standard and assessment.

In a learning portfolio, the issue of whether students receive help preparing the portfolio is less significant than in the assessment portfolio. In a high stakes portfolio, these decisions become even more important. If graduation and/or certification depend on the electronic portfolio support needs to be given to the student who has trouble with the technology. To what extent is the University required to provide training and assistance? Is it defensible to fail a student who has the required artifacts but cannot master the electronic environment? Making the transition from paper to electronic portfolios increases the visibility of reliability and validity issues by increasing the complexity of relevant issues.

Program assessment and implications

A corollary use of the assessment portfolio is for program evaluation. Data collected from faculty evaluations of student portfolios can be summarized to address the degree to which the program equips students to meet program standards. Some commercial electronic portfolio programs generate electronic reports that provide this information as a service to institutions adopting their product. This is an attractive feature in an age of accountability.
One of the consequences of implementing a portfolio across a program is that students have access to the artifacts they include from each class, providing an opportunity to compare them in new ways. This may have several outcomes. First, students may see new connections between classes, and develop an understanding of their preparation program cohesiveness given that specific standards-based artifacts are collected in the portfolio. If syllabi are well-constructed and assignments coordinated across the program, the electronic portfolio would include assignments demonstrating that students met each of the program outcome goals. On the other hand, if some faculty members, including adjuncts, do not participate by aligning assignments and requiring students to use the portfolio, the misalignment may become obvious and serve to confuse students. As the planning stages for the portfolio evolve certain assignments may prove to be less amenable to inclusion, overlaps between courses become obvious, gaps in the program are revealed. The degrees of freedom for individual faculty members to independently change their courses are reduced. Faculty cooperation and cohesion become increasingly important. In fact, some authors have said that full faculty participation is the single greatest obstacle to implementation (Gathercoal et al., 2002).

Where the Rubber Meets the Road

Arizona State University at the West campus has a Masters Degree program in Educational Administration and Supervision. Our students take 10 courses in our department, and proceed through the program in cohorts. We became interested in electronic portfolios as we witnessed our teacher education faculty plan their implementation. Electronic portfolios seemed to hold promise for insuring that our students’ experiences were cohesive across the program, and provided a vehicle for
assessing program outcomes. We also sought ways to help students integrate course content understanding across the different courses, and to link the key course assignments to field experiences where students can demonstrate authentic capability in administrative and leadership skills. Incorporating assignments into one common portfolio could give students a broader sense of the program and how each course fits into the overall goals. We also believed that learning how to use the technology and seeing its potential was a separate valued benefit. We decided to implement the portfolio in two separate ways: with a cohort group at the beginning of their program, and with a group of 13 interns nearing the end of the program.

Some of our key decisions have been:

a. Faculty met to determine the structure of the portfolio and to decide representative assignments for each course

b. Starting slowly, the two groups were introduced to TaskStream. The interns will finish a portfolio containing completed field based projects, descriptions and reflection on the internship experiences and other artifacts related to the Arizona standards for Education Administrators. The scope of the portfolio will be the semester. The students beginning the program are adding one project this semester and will add artifacts to their portfolio each semester.

c. Implementation served multiple purposes. For the interns, it was largely the practical advantage of transferring from the unwieldy paper portfolios to the more flexible electronic format. For the entering cohort of students, implementation provided a more systematic way to track
their work over time. The systematic implementation of the Taskstream portfolio provided the entering students with a longitudinal view of the program and framed an understanding of the power technology offers in the organization and communication of information. Finally, there is a growing notion that traditional comprehensive examinations need to be replaced by other methods of assessment (NEED CITATIONS). The systematic implementation of Taskstream provides the information necessary to make an informed decision about the use of an alternative to comprehensive examination.

d. TaskStream was selected because of its current use in our college; thus, we had a relationship with the vendor that made it easy for our students to get accounts. Our teacher education program had invested significant time in choosing the tool and it seemed to fit our needs. We also knew that the tool was relatively easy to use. Our experience with technology over the last five years has been that our students are increasingly comfortable with technology-based assignments. For example, we routinely use Blackboard, , for online discussions, posting course documents and grades, as well as for submission of student papers.

e. The structure of the portfolio is defined by the required classes, with each class contributing at least one artifact. Our course outcomes were already structured to meet state administrative standards. Thus the portfolio that is linked to the state standards provides a clear connection to program assessment. Each of the assignments (with one exception)
was field-based assignments that gave students some degrees of freedom about how the requirements could be met. For example, the entering students completed a 360-degree assessment and used the assessment as a foundation for a professional development plan. The professional development plan was a required artifact in Taskstream. Although some structure was imposed and therefore an externally defined theory of leadership precipitated, scaffolding is a necessary in the development of capability (Berliner, 1987) Nevertheless, through the students’ adaptation of assignments within this structure, elicited student reflection recognized the constructivist nature of their learning. The assessment is not finalized at this time.

f. For the interns, the assessment is no different than a paper portfolio. They are expected to provide documentation that they met the goals of their work plan.

Our plan was to track students’ use of the portfolio throughout the next two years of their program and then assess its usefulness as a cumulative measure of achievement. We have attached no high stakes to the portfolio for students beyond requiring that course work be submitted in this format. For the first semester, the carrot is that many resources that faculty use in classes can be deposited for student use. Thus, the intention is that by the end of their program they have a repository not only of their own work and material, but of the material provided by instructors for course purposes. Regarding program-centered reasons for adopting the electronic portfolio, to the portfolio provides link the
state administrative standards and key course assignments that allows the tracking of course assessments of students work to state practitioner standards.

There are currently gaps in our understanding of educational leadership preparation that span entire domains of practice (Murphy & Vriesenga, 2004). Among the barren domains, documentation on how we monitor and assess student progress features prominently. This paper provided a program description outlining critical considerations and key decisions in selecting and initially implementing an electronic portfolio used across a complete program of study. Specifically, discussion of using e-portfolios is not new, but their application as a means to enhance the learner’s capability of integrating and applying program content from nine distinct courses is unique. In order to effectively monitor and assess student progress some form of a trans-course path of learner-centered understanding must be established. This model of a program-based portfolio provides a trans-course path of learner-centered understanding.

Arguably, requiring students to develop portfolios of their work at the end of the program in lieu of comprehensive examinations is a model that also provides documentation of a learner’s integration of varied content (Cooner, 2004). However, as students matriculate their understandings and perspectives evolve (Yalom, 1975). Documenting the journey at the end of the journey is quite different from capturing understandings as the trans-course path unfolds.

Implementation of the program electronic portfolio was instrumental in focusing the faculty on program outcomes and providing a means for improving the alignment of course content. The dialogue emerging from the development of a program-wide portfolio provided the means for examining how courses fit together. The project
resulted in a tighter coupling of separate courses forming an aligned and integrated curriculum. Furthermore, student program portfolios enable faculty to continually monitor curriculum integration.

Berliner (1988) wrote that a critical difference between the novice and expert practitioner lay in the former being able to integrate essential information more efficiently and effectively. If leadership preparation is to enhance the students’ levels of expertise, an aligned and integrated curriculum must serve as a foundation (Dewey, 1902). This program description represents an initial effort at providing such a foundation. Nevertheless, further research is essential to validate and refine the approach described in this paper. Future studies need to evaluate the approach both from a standpoint of informing inquiries about the role of specific courses as well as holistic program impact on school leadership outcomes.
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