Assessment of Preservice Teachers' Web-Based Electronic Portfolios

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Introduction

Teacher preparation programs across the country are showing an increased interest in the use of electronic portfolios as valuable authentic assessment tools that can document students' abilities and growth related to specific standards (Bartlet, A., 2002). Portfolios provide an integrated, purposeful, dynamic, and complete collection of materials and artifacts that demonstrate the effort, accomplishment, reflection, and progress of a preservice student teacher in several areas of teaching. They engage students in authentic tasks in authentic contexts (Ring & Foti, 2003).

The implementation of electronic portfolios in a preservice education curriculum requires a well-defined purpose, framework and standards that support the integration of technology into teaching and learning. The purpose and framework of portfolios can be achieved if conceived as a primary tool for examining growth and development related to the specific standards and competencies. According to Campbell, Cignetti, Melenyzer, Nettles and Wyman (2001), the use of the portfolio during preservice education:

a) Allows the student to understand the teaching profession by reflecting on the practice of aligning artifacts with the teaching standards.

b) Allows the student to "self-understand" and reflect upon the underlying rationale for creating a portfolio, namely, to engage in the process of authentic assessment. This process provides the opportunity to record the growth over time, ascertain measures of

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performance (qualitative and quantitative), and engage in scaffolding processes in which assessment and learning guide each other.

c) Designs professional growth by identifying and reflecting on weaknesses and strengths. Learning is largely the result of student motivation.

d) Provides a holistic or authentic assessment to capture the complexities of teaching that can be viewed and assessed by others.

The use of electronic portfolios as valuable assessment tools in preservice teacher education is widely documented by researchers in the field (Barret, 2000; Lankes, A. M. D., 1998; McKinney, M., 1998; Wright, V. H., Stallworth, B. J., & Ray, B., 2002). It is an approach that focuses on curriculum outcomes that require higher level thought processes, which allow students to demonstrate problem-solving and critical thinking skills. Well-constructed portfolios connected to standards-based curriculum outcomes can be used by preservice student teacher as goals to demonstrate their knowledge about teaching. As remarked by Milman (1999), they "can capture the complexities of learning to teach and the act of teaching itself," allowing faculty to assess student teachers' growth and development based on "standards, reflections, and examples of best work" (Aschermann, 1999).

The use of performance-based assessment to measure students' achievement of standards has led many teacher preparation programs to the use of electronic portfolios. The implementation of national and state pedagogy and technology standards has also encouraged these programs to adopt electronic portfolios for performance assessment. The technologies used for portfolio assessment hold a great deal of potential as powerful tools for transforming teacher preparation programs; they help prepare tomorrow's teachers to use technology critically and reflectively, and improve current teachers' practices. In the authors' experience, electronic portfolio assessment provides a richer picture of preservice teachers' abilities that could not be seen otherwise. They serve as snapshots of student learning and reflective practice, and add to existing assessment methods to create a more comprehensive representation of student achievement.

This article relates the ways in which Web-based electronic portfolios have been used to assess preservice teachers from The University of Texas Pan American (UTPA) since fall 2002. The effort has been partially supported by the "Preparing Tomorrow's Teachers to Use Technology" (PT3) grant awarded to UTPA in summer 2001.

The University of Texas Pan American Teacher Preparation Program

The teacher preparation field-based courses offered at UTPA have recently been restructured to align them with the new state technology standards approved for all beginning teachers by the State Board of Education (SBEC). These new standards include technology standards that expect all teachers to:

- use technology-related terms, concepts, data-input strategies, and ethical practices to make informed decisions about current technologies and their applications;
- identify task requirements, apply search strategies, and use current technology to efficiently acquire, analyze, and evaluate electronic information;
- use task-appropriate tools to synthesize knowledge, create and modify solutions, and evaluate results in a way that supports the work of individuals and groups in problem-solving situations;
- communicate information in different formats and for diverse audiences; and
- know how to plan, organize, deliver, and evaluate instruction for all students, incorporating the effective use of current technology for teaching and interpreting the Technology Applications Texas Essential Knowledge and Skills (TEKS) in the curriculum.

The College of Education (COE) at UTPA has incorporated these standards across the curriculum to transform the teacher preparation program into a twenty-first century learning environment. The goal is to make all future teachers technology proficient, and to ensure that they comprehend the value of integrating technology into instruction. As described by Yanes and Curts (2003), a decision was made to model and incorporate the use of technology as a learning tool in all teacher preparation courses.

The incorporation of technology into teacher's portfolio.

As teacher preparation programs move to more standards-based teacher performance assessment, new tools are needed to record and organize evidence of successful teaching, for both practicing professionals and student teachers. Adoption of standards (state or local, NASPE beginning teacher standards and NCATE/ISTE technology standards) forms an ideal

framework for thinking about organizing an electronic portfolio. Electronic portfolios contain essentially the same information that is contained in traditional portfolio formats, with a few differences. Unlike traditional portfolios, electronic portfolios:

- use electronic technologies;
- allow students and teachers to collect and organize portfolio artifacts in many formats (e.g., audio, video, graphics, text);
- use hypertext links to organize materials; and
- connect evidence to appropriate standards or competencies.

Electronic portfolios provide a richer picture of student performance than traditional forms of assessment. The incorporation of technology into portfolios:

- make work in many media accessible, portable, examinable, widely distributable;
- make performance re-playable and re-viewable, because it is important to see performances more than once; and
- addresses ownership issues of student-created work and storage issues.

Other reasons to use technology to develop electronic portfolios include the fact that today's documents are computer-generated; digitalization of audio, video, and graphics is fairly accessible; hyperlinks allow clear connections to the internet, increasing the navigability of information; and it is easier to manage various elements of the portfolio creation process, especially storage, presentation, and duplication.

The Web-based electronic portfolio.

In fall 2000, students in instructional methodology courses were taught to construct personal, dynamic, non-linear electronic portfolios using PowerPoint® to show their collection of organized artifacts and materials (including lesson plans) in various formats—text, audio, graphics (e.g., digitized photos), video, HTML, and hypermedia presentations. Hypertext links were used to organize the materials to connect artifacts to appropriate competencies. Experience revealed that students accomplished the work but were overwhelmed by the amount of work dedicated to the construction rather than spending time in the reflective process. The greatest criticism of

the traditional portfolio, however, is that students complete the assignment in a vacuum and spend too much time concerned with how it looks rather than what is says about their progress toward professional excellence.

During summer 2001, UTPA was awarded a PT3 grant that allowed the acquisition of the electronic portfolio Web-based version from the Johns Hopkins University Center for Technology in Education (JHU-CTE). Collaboration was established between both universities and a special customized electronic portfolio Web-based version was released during the fall 2001 to UTPA. Faculty were trained in the use of the electronic portfolio Web-based version and piloted it with secondary preservice students during the fall 2002 semester. The application is being improved continuously and enhanced based on the feedback of students and faculty.

The Web-based electronic portfolio was designed to accomplish the following objectives:

- Promote and support a focus on development of quality content by providing students with an easy-to-use, template-driven, online tool for creating, storing, and accessing their portfolios anywhere, anytime.
- Encourage and facilitate ongoing collaboration by furnishing students with an easy, safe, and secure method for sharing their work with peers, advisors, and a portfolio review team.
- Reinforce and encourage reflective teaching practice by incorporating a convenient journal tool and the ability to convert private journal entries into portfolio artifacts to demonstrate professional growth over time.
- Enhance and enrich the portfolio development process by inspiring students to create a final presentation portfolio that serves as both a showcase of their work for prospective employers and as a vehicle for continued professional development and reflection.

As explained in the JHU-CTE Web page, www.jhu.cte.edu, the Web-based electronic portfolio:

- allows students to demonstrate attainment of competency in relation to established educational standards,
- provides an online journal for reflection, and
- includes a powerful, embedded messaging system that promotes ongoing collaboration with peers and advisors.

In addition, use of an electronic portfolio allows students and faculty to:

- Access the portfolio application from any computer with Internet access.
- Collaborate across distance (through the reviewer interface or feedback).
- Become a more reflective practitioner.
- Ease the transition from an assessment portfolio to an employment and professional development tool.
- Transition from collection and annotation to presentation in one simple step.
- Set future goals and track progress.

The implementation of the Web-based electronic portfolio at UTPA has allowed secondary preservice students to gather and reflect on their work, compose personal interpretations of educational standards, and communicate with peers and faculty advisors. The secondary faculty has decided to continue its use to allow students to present evidence of their professional development over time. There is consensus that the most important benefit of working with an electronic portfolio may be the sense of accomplishment derived from collecting, annotating, and reflecting on achievements and successes across the continuum of a career path.

Authentic assessment of the Web-based electronic portfolio.

If preservice student teachers are to become fully involved in evaluating their growth and competence, they need to communicate the contents of their portfolios to others and receive feedback. To achieve the latter, the Web-based electronic portfolio has been divided into four parts:

- **The Portfolio** that serves as an organized, annotated electronic repository of a member's work. It allows community members to collect and display evidence—lesson plans, student assignments, and audio or video—in order to demonstrate competency in relation to a pre-determined set of professional principles or standards.
- **The Message Center** that allows members to request feedback, respond to feedback requests, and quickly and easily communicate with other members of the community.
- **The File Cabinet** where students can upload and organize files, folders, and links that may eventually be added to the Portfolio.

- **The Journal section** that provides students with an electronic tool for recording personal and/or professional observations.

In order to facilitate both reflection and collaboration, JHU-CTE decided to create three separate interfaces within the electronic portfolio application:

- The **working portfolio** is accessible only to the student (with the option of allowing peers to view parts of the unfinished product). It is the student's starting point; this is where the portfolio owner gathers and develops evidence of professional development over time. This interface also includes a feedback component that allows students to grant access to their work to peers in advance of completing their projects.
- The **reviewer interface** allows access to the portfolio only after the student has published the finished work. It also allows for communication between faculty members. It provides faculty access to a student's finished (or published) portfolio, allowing the reviewer to take notes or collaborate with other faculty members as they review a student's work.
- The **presentation interface** is publishable on a larger scale, which allows students to showcase their work (and progress) in job interviews. It is a Web-based copy of the student's finished portfolio, which can be called upon during a student's portfolio defense or for interviewing and job searching.

Authentic assessment of a preservice student teacher's portfolio is evaluated both formatively and summatively. Professors may require students to develop specific artifacts to be posted and receive feedback on assignments. Summative evaluations (using specific rubrics) are given once students post their final work in the presentation interface. Summative evaluations include a portfolio online showcase consisting of peer-to-peer presentations with faculty. These sessions are important not only as a measure of student achievement, but also to provide the student with feedback on how a potential employer might view the portfolio.

When using the electronic portfolio, preservice student teachers work with their professors and share ideas with their peers; they learn to "make sense of the ideas and skills expressed in the accomplished practices" (Ring and Foti, 2003).

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