

## Development of a Digital Portfolio System for Preservice Teachers

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This paper is a report on the development of a digital portfolio system for a teacher education program. The development of the system was based upon a three-year comparative case study of four principals representing rural and urban schools and included pre-kindergarten through 12<sup>th</sup> grade levels in a Midwestern state. The research generated information to create a computer program to assist undergraduates with the construction of their professional teaching portfolios. As students used the computer program, portfolios were being constructed in many electronic formats. The identification of one accessible electronic system became necessary for student and program evaluation and for accreditation purposes. As a result, a development and a professional portfolio were created within a digital system. The system includes rubrics which connect the standards and the aggregation of data. This paper identifies the research, problem solving process, initiation, and ongoing refinement of a digital portfolio system for use with teacher job search, student evaluation, teacher education program improvement, and aggregation of data for accreditation purposes.

### Introduction

Portfolios are an authentic assessment (Mullen, Britten & McFadden, 2005). For many years portfolios have been used for capstone experiences and job interviews to display learned knowledge and skills (Bolles, 1999). Recognition of their value has moved into the educational domain (Baston, 2002). Teaching portfolios are being used in the regular classroom setting with students, in pre-service teacher education programs, to monitor program completion, and for teacher certification (Arends, 2001). Teacher education programs are struggling with the adoption of e-portfolios.

Well-constructed portfolios provide evaluators with information about a teacher's instructional skills, practices, and past teaching experiences. Portfolios are important in assessment and as tools for improved communication. Portfolios are considered an alternative and authentic assessment practice (Kellough & Roberts, 1999). Alternative assessments are necessary to help identify teacher knowledge and instructional practices in a classroom setting. As an assessment instrument, teaching portfolios are visual documents that record teaching experiences and promote reflection of the teaching and learning process (Bullock & Hawk, 2005). Portfolios assist teachers with active participation and collaboration for better understanding of goals, purposes, standards, and evaluation of teaching (Jensen & Kiley, 2005).

As an authentic form of assessment, teaching portfolios display in a visual format a teacher's knowledge of specialized subject matter, problem solving abilities, pedagogical skills, knowledge of the teaching and learning process, and attitudes toward learning (Arends, 2001). Teaching portfolios document a teacher's growth, efforts, and instructional practices as they work with individual, small group, and whole group learning and assessment needs (Shaklee, Barbour, Ambrose & Hansford, 1997).

Bullock and Hawk (2005) offered that reflection of an educational philosophy is very important for professional development. Pedagogy includes a teacher's beliefs and values about classroom management, how children learn, student participation and on-task behavior, assessment of learning, use of materials and equipment, and

communication skills. Pedagogical skills identify knowledge and expertise of subject matter for teaching. Lesson plans and visual instructional practice materials assist with the displaying of the teacher's skills (Jensen & Kiley, 2005). Curriculum skills show a teacher's approach to planning, understanding of purposeful education, delivery, and assessment practices of instruction (Heath, 2003).

Teaching portfolios have gained acceptance in their importance as a performance assessment tool (Freiberg & Driscoll, 2000). As teacher educators experience the move toward the use of performance assessment and the electronic medium, many questions arise. How do universities develop and incorporate electronic teaching portfolios into their teacher education programs? What will be the purpose of the portfolio, guidelines for construction, inclusion of standards, aggregation of data, supervision, and the protocol for use of electronic teaching portfolios? How will digital portfolios satisfy teacher education program goals, state and national standards movement, and school administrators= hiring requirements?

## **The Study**

The purpose of this study proper was to identify and understand perceptions of principals toward teaching portfolios for use during the teacher hiring process. Information was sought to identify portfolio content, format, and a protocol for usage, based upon the teacher hiring practices of four principals and their perceptions of the characteristics of a useful job search teaching portfolio. As an increasing number of school administrators ask candidates for portfolios as part of the interview process, it is necessary for teachers to give them an appropriate, useful document. Understanding the principals= perceptions about the hiring process and teaching portfolios, aided in identifying the content and format of the ideal teaching portfolio that principals want to use. A comparative case study research model framed by questions designed to help in identifying the ideal elements, format, and usage of teaching portfolios. The principals were the key informants in the study. The four principals represented early childhood, elementary/primary, middle school and secondary level schools in rural and urban settings in a Midwestern County. The administrators= years of service ranged from fifteen to more than thirty years. Collectively they had amassed more than one hundred years of experience in teaching and administration. The sample included one female and three male principals.

In February 1997, a pilot study was conducted with the four principals to identify a clear direction for the study. Two subsequent interviews with the administrators, collection of documentation, and interviews with their recently hired teachers were conducted in October 1998 and March 2000. The interviews were conducted in a conversational format. Responses from the administrators were recorded in writing and field notes were logged for each interview. The notes described the setting and conditions of the interviews, the nature of the conversations, and the behaviors of the interviewees. Information was coded and compared to identify similar and different responses. The coding consisted of color-specific identification of each principal, positive and negative responses to questions and other information given during the interviews. The interviews identified demographic information, hiring practices, teacher characteristics, portfolio use during the job interviews, preferred elements, and formats of teaching portfolios. Through the analysis of the gathered data, identification of teaching portfolio contents, elements, and protocol for usage were identified. A computer program was created and refined for student use during the senior teaching experience. As student teachers used the Professional Teaching Portfolio: A Computer Program (9) ([link to www.hyperstudio.com](http://www.hyperstudio.com)), they constructed their portfolios on a floppy disc, compact disc (CD), zip disc, or a web based site. There needed to be one electronic location and a basic format for all teaching portfolios.

A committee was formed to identify a software program, server space, and cost for digital teaching portfolios. The committee members represented Teacher Education, Instructional Technology, and Placement Departments on campus. Software programs and other college portfolio programs were explored. Implementation of the program began in the Fall of 2001. LiveText® Software was selected for use with the portfolio. The software provided opportunities to develop lesson plans connecting the Illinois State Goals and the Special Professional Associations (SPA) standards, as well as assignments. Faculty incorporated the software into their courses and reported to the company upon needed improvements for use with the teacher education program. All teacher education majors, except seniors used the program for construction of lesson plans which connected goals and standards and started work on their professional teaching portfolios.

In December, 2002 a development portfolio was added to the software. Templates were constructed for elementary education, special education, early childhood education, and secondary education majors. The templates contained

all courses required for the education major and stored assigned performance assessments. The performance assessments were connected to the Illinois Professional Teaching Standards, Special Professional Associations, and the National Council for Accreditation of Teacher Education Standards. A rubric was designed for the Professional Teaching Portfolio and for the Development Portfolio for student and program assessment.

The Fall of 2003 incorporated a Professional Teaching Portfolio course to be taken during the student teaching experience. During that time student teachers analyze their development portfolio and construct their professional teaching portfolio based upon their unit teaching in the schools. The rubric constructed for the portfolio assists with the analysis and reflection process. At the end of the semester, reflection of the four year learning experience, connection of standards, and the professional teaching portfolio are presented to education peers, school faculty, and college instructors.

The year of 2003-2004 marked significant growth of the portfolio system. As the accreditation date approached our college, it was imperative to aggregate data for the assessment of our teacher education program. Through the development portfolio, all submitted artifacts (project/assignments from each teacher education class) had a rubric attached. The rubrics are connected to the Illinois Professional Teaching Standards (IPTS), National Council for Accreditation of Teacher Education (NCATE), and the Special Professional Associations (SPA's). Since the collection of this data, a Virtual Document Room was created to display artifacts, rubrics, and identify the successful completion of standards. The data provides information for program improvement and necessary information for state and national accreditation.

## **Findings**

An analysis and review of the data identified a marked growth and change in the principals' knowledge of and perceptions about professional teaching portfolios. As portfolio usage increased, the principals exhibited increased confidence in their ability to effectively integrate the documents into interviews. The school administrators discovered that they needed more information about candidates' instructional skills, practices, and past teaching experiences, and Credentials alone do not suffice. During the pilot, the principals indicated little awareness of teaching portfolios. By the last interviews, the principals wanted to view teaching portfolios and expected teachers to present portfolios during the job interviews, both paper and electronic versions. Using a web-based portfolio demonstrates to the administrator the teacher's computer literacy and currentness with technology. Principals stated that they would have the flexibility to review a digital portfolio, in detail, at a time and place most convenient to them. The documents containing the identified portfolio content, format, and a protocol for usage had gained full acceptance from the administrators. The principals agreed that teaching portfolios provided information necessary for teacher hiring.

The faculty elected to use the software within their education courses. Lesson plan templates were available with a Standards component. The templates provided students and faculty with easy access for connecting the Special Professional Associations Standards, Illinois State Goals, and the Illinois Professional Teaching Standards. Other components included portfolios, projects, courses, and resources. The faculty used the software and reported to LiveText® identified changes for improvement of the software program.

The Professional Teaching Portfolio was incorporated into the software program. A rubric was constructed for final evaluation purposes. Lesson plan templates were used as well as the electronic resources by the students. In order to meet standards for the National Council for Accreditation of Teacher Education, electronic portfolios appeared to be an answer. Student teachers reflect on their practice by answering conference questions attached to the rubric. This selected electronic medium would provide the most efficient means for the identification of successful completion of standards, by students and the aggregation of data for accreditation purposes.

An electronic development portfolio was created in August, 2001. The development portfolio included required courses, performance assessments, and connection of standards for teacher education majors. Performance assessments were to be submitted to faculty for evaluation through the development portfolio. As students share their assignments with the instructor, they received corrective feedback. Rubrics were added to the required assessments in the portfolios. The rubrics provide information for bench marks and program completion.

## Conclusions

The electronic portfolio program proved to be beneficial for the teacher education program. Principals, preservice teachers, college faculty, and teacher education programs are using teaching portfolios for a visual documentation of authentic performance assessments. The electronic portfolios are continually undergoing problem-solving for program refinement.

Identification of components desired by school administrators assisted with the construction of the professional portfolio. The principals felt that portfolios provided information about a teacher's instructional skills, practices, and past teaching experiences. The administrators offered their observations about professional teaching portfolios. Professional teaching portfolios (Pardieck, 2002):

- Illustrate key concepts and information about teaching.
- Reflect knowledge of current educational terminology and practice.
- Provide evidence of a teacher's organization skills, planning skills, and instructional practices.
- Should be available for administrators to view at their leisure.
- Assist principals toward generating meaningful interview questions.
- Should be used for on-going professional development.
- Confirmed an administrator's hiring decisions.
- Must be concise, easy to read, and provide directions for reading to assist school administrators use.

After researching other electronic portfolios and programs, LiveText® Software was selected for use with the teacher education department. The software was designed for teacher education use and implements improvements when identified. The faculty management of the program has been low. Students purchase a tutorial compact disc with their access code at the University bookstore. The company has been very receptive to students and faculty needs. Information about the software is presented in the Educational Foundations course and the professional portfolio information is presented in the Novice Teaching Seminar. Students learn how to scan information and use other components of the program in the Technology Application course. Students have the opportunity to function independently with the documentation of their work.

Preservice teachers found portfolios very beneficial if they contained a purpose, clear guidelines, and opportunities for selection of artifacts. Students stated they enjoyed working with the electronic portfolio program. The faculty constructed templates and rubrics for course assignments and those items were located within the software. Students had easy access as they wrote, copied, or scanned information into their portfolios.

All four areas of the teacher education department were represented in the development portfolio. The development portfolio also contained the required standards for use with the performance assessments. The professional portfolio contained all components required for completion, based upon the research with the principals and connection of the standards.

Teacher education faculty understood the importance of using an electronic medium for performance assessment. They were receptive to the adoption of the software and used the development portfolio for evaluation of required assignments. Through the software application use, students may share their artifacts with Instructors for assessment purposes. The editing button allows Instructors to provide corrective feedback to the students.

Principals, preservice teachers, professors, and the education department have experienced the growth and gains from the use of the electronic portfolio program. E-portfolios allow for easy access and storage of selected performance assessments in a visual format. As the e-portfolio program evolves, new concepts and areas of improvement continue to be identified and problem solving strategies are being incorporated. The easy access of links to professional standards, accreditation standards, and state goals are accessible with each performance assessment assisted with the ease of use. In progress is the aggregation of portfolio data which will identify successful completion of standards and completion of assignments for evaluation. An electronic document viewing room was added and provides accessibility of information for program and accreditation evaluations and

improvements. Video clips of preservice teachers can be found in the lesson plan component of the portfolio. The inclusion of video clips authenticates the teaching portfolio by showing the teacher using the documented instructional practices in a real classroom setting. Electronic portfolios are here to stay and will continue to be used and refined as a valuable assessment tool in teacher education.

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