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A Tale of Two Programs:  
A Comparative Study of Electronic Portfolio Assessment in Teacher Education

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### Abstract

Teacher education programs in the State of California are increasingly held accountable for the assessment of teacher candidates' competencies and performance. One salient assessment tool is the utilization of portfolios in teacher education programs (Wolf, 1989; 1991). Among the newest and most innovative templates of portfolios in teacher education are electronic portfolios. Electronic portfolios are gaining popularity in part, due to the prevalence of their technological accessibility and the numerous on-line portfolio options.

This paper reports on a pilot project that utilized electronic portfolios as an assessment tool at a start-up public university across two fifth-year credential programs respectively: the Education Specialist: Mild/Moderate Disabilities Level One and the Single Subject Credential Programs. The primary research question addressed was how do the constituents (e.g., credential candidates, faculty, and portfolio evaluators) perceive the electronic portfolio processes within and across the two teacher preparation programs.

Descriptive findings related to the development and management of electronic portfolios within and across programs is shared. A discussion of the comparative findings from the programs is presented, as well as the implications for the implementation of electronic portfolios in teacher education programs.

## A Tale of Two Programs:

### A Comparative Study of Electronic Portfolio Assessment in Teacher Education

#### Introduction

Teacher education programs in the State of California are increasingly being held accountable for the assessment of teacher candidates' competencies and performance. One component of the teacher education assessment movement in California is the implementation of the Teacher Performance Assessment (TPA) in selected credentialing areas including, the multiple and single subjects. In the interim, before the statewide TPA is mandated uniformly for all of California's teacher credentials, teacher education programs have autonomy in decisions about their own teacher candidate assessment processes and outcome measures.

Nationally and internationally, portfolios are highly regarded as a salient assessment tool in teacher education (Wolf, 1989; 1991). Research on the use of portfolios in pre-service teacher preparation programs reveals that portfolios are a medium through which student teachers reflect on their professional development (Loughran & Corrigan, 1995).

In a study of the preparation of teachers of students with behavioral disorders, Bloom and Bacon (1995) found that portfolios assisted the students with self reflection and assessment of their development as a professional educator. The authors found that the portfolios provided assistance to the student teachers in the development of a wide range of skills to aid in decision making, problem solving, and establishing a connection with the teaching profession. The portfolio process also gave students more self confidence in their abilities through the responsibility and control over their own work. The students were energetic and enthusiastic about having the opportunity for choice in the development of their portfolios, which led to addressing complex issues in teaching instead of writing for faculty approval. Some

disadvantages included students' apprehension with the evaluation process, as well as the labor intensiveness of the assessment process for the faculty. The authors suggested that these issues may be managed by the active involvement of participating students and faculty in the portfolio process, as well as the articulation of clear expectations about the assessment process and required products.

In a study of the use of portfolios as a tool for promoting teaching, Klenowski (2000) focused on the extent to which portfolios supported the development of reflective practice and teaching among students and lecturers in secondary education. It was found that the use of portfolios profoundly impacted the pedagogic practice among the pre-service teachers, but also among the lecturers. It was reported that initially the students did not understand the value of the portfolio; they viewed it as a data filing system. Over time, the assessment procedures and explanations became clearer; the students began to appreciate the reflective aspects of the portfolio process. Portfolio exemplars were provided, as well as more specific evaluation criteria. Lecturers also gained from embedding the portfolio process into their courses. Changes in their teaching styles were noted through the integration of reflective practice into their teaching and the connection to their own philosophy of teaching.

In the field of teacher education, electronic portfolios are gaining in use due to the prevalence of technological accessibility and numerous on-line portfolio options. Dysthe and Engelsen (2004) argued that digital portfolios can offer a number of benefits, including a great degree of peer interaction among student teachers. If a student is given access to review and critique other students' portfolios, the social context of learning may be exemplified as the ability to share and revise work is easily facilitated in digital portfolio systems.

Among the advantages and disadvantages of electronic portfolios are the technologies and technological skills required for such systems. Woodward and Nanlohy (2004) examined how student teachers and faculty developed and utilized a digital portfolio rather than a traditional paper format. Initial results indicated that the students encountered problems learning the new software, navigating copyright restrictions on music and photographs, and managing the storage of large amounts of data. The advantages found in using the digital portfolios were more interaction with the intended audience and the easy reproduction of the electronic portfolio. The authors recommended that digital portfolios should be developed within a carefully designed framework.

The aforementioned studies present many relevant issues related to the use and management of traditional and electronic versions of portfolios in teacher education programs. There are many benefits gained from the use of portfolios, as well as issues for future research to investigate. To this regard, this paper reports on a pilot project that utilized electronic portfolios as an assessment tool in two fifth-year credential programs: the Education Specialist: Mild/Moderate Disabilities Level I and the Single Subject Credential Programs.

The primary research question guiding this study was: How do the constituents (e.g., credential candidates, faculty, and portfolio evaluators) perceive the electronic portfolio processes within and across the two teacher preparation programs? Descriptive findings related to the development and management of using electronic portfolios in each program will be shared. A discussion of the comparative findings from the programs is presented and the implications for electronic portfolio implementation in teacher education programs are discussed.

## Method

### Background

Our start-up public university opened its doors to undergraduate and post-baccalaureate students in August of 2002. At that time, the elementary Multiple Subjects Credential Program enrolled 20 students. During the following academic year, the secondary Single Subject Credential and the Education Specialist: Mild/Moderate Disabilities Level I Credential Programs began with 8 and 12 students, respectively. All three programs were written and approved under the newly developed state of California teacher education policy standards known as SB 2042. Included in the new state policy standards are 13 Teacher Performance Expectations (TPEs) that every credential student is expected to demonstrate proficiency when exiting their respective credential program.

Likewise, teacher candidate assessment was a mandated standard for all programs in the State of California. The California Commission on Teacher Credentialing (CCTC) designed the Teacher Performance Assessment (TPA) as a measure to assess all multiple subjects and single subject candidates on their mastery of the 13 TPEs.<sup>1</sup> However, funding was not provided for the four-task TPA implementation. Therefore, every teacher preparation program had to design and implement its' own equivalent assessment plan. At our university, we decided to conduct a pilot project using portfolio assessment as a tool across our credential programs to determine the efficacy of our system while taking into account the current state and national accreditation standards, as well as the proposed public policy changes.

The assessment process began in fall of 2003 as a pilot project for the Multiple Subjects Credential Program. Five full-time tenure-track and two full-time lecturers in the Education

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<sup>1</sup> At the time of this pilot project, the Education Specialist: Mild/Moderate Disabilities Credential was not required to be aligned to or assess the TPEs.

Program participated in four meetings in the fall of 2003 and five meetings in the spring of 2004. These meetings resulted in the identification of four *core competencies* that our teacher candidates should acquire and demonstrate upon program completion. Each of the 13 TPEs were backward-aligned with one of the four core competencies.

#### Portfolio development and requirements

The Education Specialist: Mild/Moderate Disabilities Level 1 Credential and the Single Subject Programs designed their own core competencies with supporting elements from program hallmarks, state and national professional development standards, and a review of the literature. See Appendices A and B for each program's portfolio structure, core competencies, and supporting sub-elements. One tenure-track faculty member in each program served as the Faculty Assessment Coordinator (FAC) and took the lead on implementing the electronic portfolio assessment project for their respective programs. The FACs consulted with each other on technical aspects of the electronic portfolio development, and also worked collaboratively to create common rubrics for artifacts and reflective summaries of the portfolios; these efforts allowed for the aggregation and comparison of data across the credential programs.

In each program, credential candidates were introduced to the electronic portfolio commercial program selected by the FACs, the portfolio procedures, and portfolio requirements in the respective student teaching seminars. Education Specialist candidates were required to submit a reflective summary for each core competency and a minimum of one artifact for each core competency sub-element. Single Subject candidates were required to include a minimum of one artifact for each core competency sub-element and one summary reflection for each core competency for evaluation. At least 50% (n=11) of the artifacts in the Single Subject candidates' portfolio were required to be original student work.

### Research site and participants

This study took place at a four-year public university in Southern California. Twenty credential candidates and six evaluators participated in the Education Specialist pilot assessment project. Twelve credential candidates and five evaluators participated in the Single Subject pilot assessment project. All credential candidates signed informed consent forms and agreed to participate in this study.

### Data collection and analysis

Because this study was descriptive in nature and detailed the processes of piloting an electronic portfolio assessment project, qualitative data were collected. Detailed field notes were taken at all interviews, meetings, and courses when the portfolios were a topic of discussion. Focus group interviews with evaluators in each program were conducted after the evaluation of candidate portfolios was complete. Data from candidates were obtained during student teaching seminars both during the portfolio process and after their portfolios were electronically submitted. E-mail correspondence with students and evaluators was used as an additional data source. The two FACs kept notes and journal logs pertaining to the electronic portfolio assessment project.

Each program had evaluation procedures in common and those that were unique to the program. In the Education Specialist Program, pairs of evaluators were assigned to a common group of candidates and they independently evaluated all required elements of the portfolios. The evaluators used rubrics developed for the assessment project (Grier & Denney, 2004). See Appendix C for the reflective summary rubric. Inter-rater reliability was established among pairs of evaluators.



In the Single Subject Program, a meeting with all evaluators occurred to establish base-line understandings of the reflective narrative rubric and how this applied to evaluating student work (inter-rater reliability) with the electronic portfolio system. The evaluators identified areas of expertise within the portfolio sub-elements and evaluated all student portfolios in their expertise area. Evaluators scored portfolio artifacts independently at their own convenience over winter break. They reviewed candidate submissions electronically, but used paper and pencil scoring sheets because the on-line system could not support multiple evaluators scoring simultaneously.

Each FAC independently analyzed their own program data. After the initial coding was conducted, the two faculty members discussed and compared their findings. The comparative findings were further analyzed for emerging, over-arching themes across the two programs.

### Results

Two major themes emerged from the data analysis. These themes were identified as *process* and *tool oriented* elements across evaluator, student, and FAC constituencies. In Tables 1 and 2, the categories of data are presented that summarize the results of the study. Table 1 presents process-oriented elements and Table 2 presents tool-oriented elements within and across the two credential programs.

Table 1. Process-Oriented Elements Within and Across the Credential Programs

Process-Oriented Elements	Evaluator-generated	Student-generated	FAC-generated
Education Specialist	<ul style="list-style-type: none"> <li>• Liked the evaluation rubrics, however, would suggest changing the artifact rubric to a binary schema e.g., meet criteria, does not meet criteria</li> <li>• Concern about the artifacts and the validity of candidates' original work vs. secondary sources</li> <li>• Need to create a more comprehensive student assessment mechanism</li> </ul>		
Common	<ul style="list-style-type: none"> <li>• Too much time for evaluation</li> <li>• 70+ hours for 20 students for one semester in Education Specialist; 60+ hours for 12 students for one semester in Single Subject</li> </ul>	<ul style="list-style-type: none"> <li>• Timing of portfolio submission (end of semester) seemed very rushed</li> <li>• Wanted more information on criteria of elements and what kinds of artifacts "count"</li> <li>• Uncertainty and anxiousness over "who" was going to be evaluating portfolios</li> <li>• Too much time was taken out of student teaching seminar to talk about portfolios</li> <li>• Portfolio seems like an "add on" requirement</li> </ul>	<ul style="list-style-type: none"> <li>• Too much time to coordinate all components between students and evaluators</li> </ul>
Single Subject	<ul style="list-style-type: none"> <li>• Liked focusing on one element at a time across students</li> <li>• Needed to have a context for student artifacts submitted (where is the connection?)</li> <li>• Wanted more group training on the portfolio criteria &amp; purpose</li> <li>• Most artifacts were class assignments--why re-evaluate?</li> </ul>		

Table 2. Tool-Oriented Elements Within and Across the Credential Programs

Tool-Oriented Elements	Evaluator-generated	Student-generated	FAC-generated
Education Specialist			
Common	<ul style="list-style-type: none"> <li>• The commercial program was very hard to use e.g., home computer speed and compatibility</li> <li>• Opening the artifacts was difficult especially with scanned documents</li> <li>• Too much time to evaluate e-portfolios</li> <li>• Was convenient to evaluate at home and “come and go” from the task</li> <li>• Time on technical use was excessive</li> </ul>	<ul style="list-style-type: none"> <li>• Liked being able to submit artifacts electronically</li> <li>• System was very easy to use</li> <li>• Liked being able to link lesson plans created in the commercial program directly into portfolio</li> <li>• Access to a scanner was sometimes problematic</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple simultaneous evaluators (only one evaluator can have access to artifact at a time)</li> <li>• Once students send artifacts in for “evaluation” they are locked out of portfolio</li> <li>• Can aggregate student scores but not reviewer comments</li> </ul>
Single Subject			<ul style="list-style-type: none"> <li>• Part-time student work was not evaluated--sent for review</li> <li>• Reflective narratives were not evaluated because of the system set-up</li> <li>• Primary source requirement not evaluated holistically</li> </ul>

Discussion

Both teacher education programs made significant changes to their respective portfolio assessment processes based upon the results of this study. The Education Specialist Program faculty made three significant changes to the assessment of credential candidates using the electronic portfolio system. First, the content and development for each core competency of the portfolio will be embedded into coursework and fieldwork, and not as an additional requirement for program completion. Secondly, signature assignments will be identified and explicitly outlined in the program’s coursework and fieldwork for the students. These signature assignments are aligned to the portfolio elements. The content of the student portfolios will be expanded to include signature assignments, reflective summaries for the core competencies, and student teaching evaluations –all of which must be original work. Lastly, the portfolio process

was previously developed during the culminating semester when they would graduate –creating a tremendous amount of time and work for the evaluators and assessment coordinator at one point of time in the program. Since the portfolio process has now been embedded into all of the coursework and fieldwork throughout the program, students will begin the portfolio process at the inception of their program; therefore creating a greater sense of shared accountability for the portfolio assessment process across the program’s faculty and students. The signature assignments to be included in the portfolios will receive a formative evaluation in the designated courses and a summative evaluation in the students’ culminating semester of the program. These aforementioned changes specifically addressed comments from the FAC, students, and evaluators regarding the identified obstacles of the portfolio process reported in this study.

The Single Subject Program faculty recommended three major changes in the portfolio process as a result of this study. First, artifact submission will be embedded into the program coursework and evaluated by the individual course instructors as part of the course requirements. The Single Subject Program instructors have since identified course assignments that align to the portfolio elements that will be considered signature assignments for use as possible portfolio artifacts. This list of suggested artifacts (e.g., signature assignments) will be given to students when entering the program and will be identified in each course syllabus. Second, all artifacts submitted by students must be their original work. Now that many of the process details and signature assignments have been identified and integrated into the coursework, the Single Subject faculty believes it reasonable for students to generate artifacts that represent their knowledge, skills, and dispositions. Third, the structure of the portfolio evaluation process has been changed. Only the reflective narrative will be evaluated at the end of each semester. This reduces not only the time spent by evaluators but also the cost necessary for paying evaluators.

First semester student teachers will submit all of the artifacts and a reflective narrative for one core competency area for formative evaluation. Second semester student teachers (e.g., graduating students) will submit a complete portfolio for summative evaluation. These changes addressed the concerns of the FAC, students, and evaluators regarding the portfolio process.

Interestingly, each program is adopting the practice of signature assignments to embed the portfolio process into the programs' structure but will be doing so in different ways. The signature assignments in the Education Specialist portfolio will be the same for each student. Therefore, every student portfolio will have the same artifacts included in their portfolio. This is not the case for the Single Subject portfolios. The signature assignments are identified as only suggestions for portfolio elements; there is freedom for the students to include other original artifacts in lieu of a signature assignment. Because the single subject students do not all take the same sequence of classes due to the specialized content methods classes and because the faculty feel it is more important to see how the students construct their own understandings of the core competencies and make connections in their reflective narrative, this choice was built into artifact selection. This is an important distinction between the two programs.

There were significant concerns raised by evaluators and the FACs about the commercial electronic portfolio program. Although the evaluator and FAC comments from each program were similar, the Education Specialist program decided not to use the commercial program the following year based upon the difficulties and obstacles identified in this study. The Single Subject program however, continued to use the commercial product based upon the positive feedback received from the students regarding ease of use and the access to the California State Academic Content Standards within the lesson plan template. The FACs shared the data and initial results from this study with the e-portfolio company. The company has since updated their

service to include options for multiple simultaneous raters and aggregating qualitative comments on-line. We feel this is a significant outcome of this study. The Education Specialist program is now reconsidering using the system now that these two major obstacles have been remedied.

It is anticipated that these changes in the portfolio processes in both programs will become seamless and not viewed as an additional assignment giving validity to the portfolio as a significant program requirement. These changes will also make program instructors more aware and accountable for evaluating the portfolio products as part of the curriculum and not a time-consuming event at the end of the semester. As with any form of assessment, time will be needed in learning to use the tools. However, as evaluators use the tools more frequently, less time will be involved in assessing student work.

### Implications

Overall, a portfolio must be and perceived as integrated into a teacher education program by students and faculty. It is important that portfolio elements are aligned and goals and tasks are clear to the participants. Additionally, the time and resources needed to successfully implement and maintain a portfolio system must not be overlooked. Coordinating the players and tasks, evaluation of candidate work, evaluation of process, aggregation and analysis of data, data management, and maintenance of the process are all necessary elements in a successful portfolio assessment process.

The significance of this pilot study, as compared to other institutions implementing electronic portfolios for the first time, is that being at a start-up institution is an extremely unique environment. As faculty, we had the freedom to create curricular programs and assessment tools without preconceived structures and historical issues to overcome. This freedom exposes other obstacles – ones that may be representative of any teacher education program as evidenced in the

literature. At the time of this study, we were not just trying to develop and implement an electronic portfolio assessment system in an established institution; we were (and still are) simultaneously developing curricula and policies for the credential programs and for the university. Ours is a fluid and flexible environment and one in which our students are learning the same traits as they begin the learning to teach process. At first, the students in both programs viewed the portfolio as an “add-on” piece—because for them, it was not integrated into the program. But, since this study, the portfolio systems in both programs have evolved in different ways and all constituents have a better understanding of the portfolio and its significance in their professional lives (Klenowski, 2000).

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## Appendix A

Education Specialist: Mild/Moderate Disabilities Level I Credential Program Portfolio  
Organizational Outline:

- I. Resume
- II. Philosophy of Teaching
- III. Core Competency: Foundations
  - A. History
  - B. Laws and Policy
  - C. Ethics
  - D. Professional Standards and Practices
  - E. Family Systems Across the Life Span
  - F. Service Delivery Systems
  - G. Consultation Models and Processes
  - H. Effective Communication and Collaboration
  - I. Characteristics of Learners
- IV. Core Competency: Assessment
  - A. Individual Assessment
  - B. Group Assessment
  - C. Assessment Processes – Pre-referral, Referral, Identification, Evaluation, Re-evaluation
  - D. IEP Goals and Objectives
  - E. Behavioral Assessment
- V. Core Competency: Methods
  - A. Learning Environments, Social Interaction, and Classroom Management
  - B. Core Curriculum in General Education
  - C. Specialized Curriculum
  - D. Instructional Methods
  - E. Intervention Methods
  - F. Modification of Methods and Materials
  - G. Positive Behavioral Support
- VI. Guiding Questions:
  1. What are the special qualities that you bring as an individual and you have developed as a professional?
  2. How does this portfolio represent you as a developing professional who can address the diverse needs of all students?
  3. How does this portfolio represent your evolving philosophy of teaching and practice?

## Appendix B

## Single Subject Teaching Credential Program Portfolio Organizational Outline:

## I. Resume

## II. Philosophy of Teaching

III. Core Competency: Learning Environment (TPEs 9, 10, 11)

- A. Establishing and Maintaining a Culture for Learning
- B. Classroom Procedures
- C. Student Behavior
- D. Long-term Planning and Instructional Goals
- E. Daily Planning and Lesson Objectives
- F. Resource Selection, Adaptation, and/or Enrichment

IV. Core Competency: Instructional Process (TPEs 1, 2, 3, 4, 5, 7)

- A. Content Knowledge in the Content Area —Grade/Developmentally Appropriate
- B. Instructional Methods in the Content Area —Grade/Developmentally Appropriate
- C. Literacy in the Content Area
- D. Teaching English Learners
- E. Teaching Special Needs Learners
- F. Student Engagement in Learning
- G. Assessment of Student Learning

V. Core Competency: Learning About Students (TPEs 6, 8)

- A. Approaches to Learning
- B. Background and Culture
- C. Behavioral Assessments
- D. Assessing Literacy Skills
- E. Assessing Special Needs

VI. Core Competency: Professionalism (TPEs 12, 13)

- A. Professional, Legal, Ethical Obligations
- B. Reflecting on Teaching
- C. Communication with Families
- D. Maintaining Accurate Records

## VII. Portfolio Summary (graduating students only)

1. What are the special qualities that you bring as an individual and you have developed as a professional?
2. How does this portfolio represent you as a developing professional who can address the diverse needs of all students?
3. How does this portfolio represent your evolving philosophy of teaching and practice?

Appendix C

Reflective Narrative Rubric

	<b>Distinguished</b> Value: 3	<b>Proficient</b> Value: 2	<b>Emergent</b> Value: 1	<b>Unsatisfactory</b> Value: 0
Knowledge, Skills, & Dispositions	Reflected in-depth on knowledge skills and dispositions related to core competency.	Reflection on knowledge, skills, and dispositions related to core competency.	Reflected on at least two (knowledge, skills, or dispositions) related to core competency.	Little to no reflection present when addressing knowledge, skills and dispositions related to core competency.
Connected to TPEs	Each TPE for the core competency is addressed with several examples from portfolio artifacts.	Each TPE for the core competency is addressed with at least one example from portfolio artifacts.	Most TPEs for the core competency are addressed with at least one example from portfolio artifacts for each TPE.	Most TPEs are not addressed or no examples from portfolio artifacts are referenced.
Writing: Grammar & Mechanics	Errors in grammar and mechanics are not present. Narrative is extremely well-written.	Few errors in grammar and mechanics are present. Narrative is well-written.	More than a few errors in grammar and mechanics. Writing needs improvement.	Narrative needs extensive revisions due to grammar and mechanics errors.