# Interdisciplinary Digital Portfolio Assessment: Creating Tools for Teacher Education

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## Executive Summary

This article provides the processes and reflections, the influences on the process and criteria, and the resulting rubric that emerged when a university-wide committee was formed to create an assessment rubric for a newly adopted digital portfolio initiative.

Teacher education programs are experiencing reform movements in both performance based assessment and in the integration of technology into the curriculum. Performance assessment entails movement away from traditional curricula and assessment means to achieve more authentic, "real world" ways of verifying the preparedness of education graduates. Our institution's response to these reform efforts is centered on the newly adopted requirement of a digital portfolio for all preservice teachers. Digital portfolios by preservice teacher education majors have brought a new challenge in the assessment of digital products for institutions of teacher education nationwide. This challenge is magnified when preservice teachers are studying in various areas of licensure, many of which are traditionally housed in various colleges throughout a university. To provide assessment coherency across disciplines, a group of faculty members representing almost all content or teacher licensure areas in teacher education was formed to begin the process of shaping the digital portfolio assessment rubric. The evolution of the processes and outcomes encountered is shared.

While at times contentious, the interdisciplinary approach was undoubtedly one of the most critical decisions. This involvement of a diverse group of faculty members allowed for issues regarding instructional preferences and greater curriculum goals of particular teacher education concentration areas to be addressed and infused into the assessment process. Involving various stakeholders contributed to the group's progression from a focus on technical aspects of digital portfolio creation to a focus on communication, application, and articulation of shared expectations. While the creation of a rubric seemed to be a fairly simple task, the attention to institutional, political, and instructional influences was critical. Without paying due attention to these three areas, the university-wide creation, adoption, and implementation of an interdisciplinary assessment tool specific to the digital environment would have been insignificant to the greater goals of the teacher education program. Overall, the critical influences to the development of the project were the organization and articulation of the teacher education program via the decision points document, the cohesive and collaboratively created portfolio model, and the interdisciplinary viewpoints that were represented.

Though research and evaluation activities associated with this assessment tool are in their infancy within Ball State University, the sharing of knowledge, materials, and resources is thought to be critical to the timely and effective use of digital portfolios within the context of a university-wide contingency of stakeholders. In addition, readers should note that all supportive documents (i.e.,

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portfolio model, rubric, etc.) are hyperlinked within the document and available via the Internet.

**Keywords**: digital portfolio assessment, digital portfolio, teacher education, performance-based assessment

# Introduction

The eager anticipation of the widespread and multifaceted use of digital portfolios by preservice teacher education majors has brought the new challenge in assessment of digital products to institutions of teacher education throughout the United States. This challenge is magnified when preservice teachers are studying in various areas of licensure, many of which are traditionally housed in various colleges throughout a university. The following article provides the processes and reflections, the influences on the process and criteria, and the resulting rubric that emerged when a university-wide committee was formed to create an assessment rubric for a newly adopted digital portfolio initiative.

Throughout the United States, three conditions guide how institutions of teacher education approach the integration of technology into teacher education programs. (1) University faculty and students need the tools, environments, and on-going professional development to integrate technology into teacher education curriculum. (2) New national accreditation standards are requiring schools of education to prepare new teachers and administrators who can integrate technology into their curricula. (3) Licensure and certification are now requiring proficiency in technology integration for new teachers and administrators. Our institution's response to these guiding conditions is centered on the newly adopted requirement of a web-based digital portfolio for all preservice teachers.

The Indiana Professional Standards Board mandated that beginning in Fall 2002 our university have in place an approved performance-based Unit Assessment Plan (UAS). During the previous four years a campus-wide group called the Teacher Education Performance Assessment Steering Committee (TEPASC) worked on creating procedures for achieving this mandate. Specific to the knowledge, dispositions, and performances expected of teaching majors, TEPASC recommended that: (a) individual colleges provide multiple opportunities for each student to demonstrate and document an understanding of the P-12 proficiencies identified by the state, and (b) students demonstrate and document successful experiences in planning and executing lessons directly related to content or developmentally relevant state identified P-12 proficiencies.

The national trend toward performance assessment encourages national and state standards bodies to require institutions who prepare teachers to depart radically from traditional curricula and assessment means to achieve more authentic, "real world" ways of verifying the preparedness of education graduates. This shift in assessment began in the mid-1980s as a response to the nature of "paper-testing" for a teaching license (Lyons, 1998). Performance assessment in teacher education challenges the relationship between testing for licensure and actual teaching performance. The essence of performance assessment is to evaluate more accurately what effective teachers must know and be able to do in the classroom.

Massive reform efforts beginning in the 1980's advocated for alternative assessment in teacher education. The introduction of portfolios, and other forms of performance-based assessments, reflects an increasing dissatisfaction with traditional assessment methods, which do not attend to process and authenticity. Portfolios have emerged as a popular tool and are supported by principles, such as providing a new perspective on learning, individual progress, self-evaluation, or reflection. Thus, portfolios in initial teacher education programs represent alternative assessments as demonstrations of learning rather than other indirect indicators of competency (Shepard, 2000).

# Digital Portfolios in Performance Assessment

Digital portfolios have been identified as one performance assessment instrument available to preservice teachers for demonstrating and documenting their individual understanding and abilities related to these multiple proficiencies (Bullock & Hawk, 2001). The digital portfolio model is mindful of the extant literature on the benefits of portfolios for teaching and learning and includes a major focus on student reflection and the creation of performance-based artifacts (Cambridge, Kahn, &Yancey, 2001; Shulman, 1998; Wiggins & Tighe, 1998).

In recent years, a number of portfolio types have been used throughout our university by faculty representing a variety of disciplines. The medium of these portfolios has included paper, PowerPoint, and Web-based. Likewise, the specific purpose of the portfolios has varied according to the needs of the discipline and the preferences of the faculty member teaching the course. As the university began to discuss a campus wide portfolio model for teacher education, it was recognized that this cross-disciplinary expertise should be utilized, and that a consensus needed to emerge regarding the type of portfolio best suited for teacher education. The overall goal for the digital portfolio process is to meet the learning and competency objectives of the program through a student-centered reflective process that ultimately benefits all stakeholders. Given the longitudinal nature of the student portfolio, we hope that student reflection will become richer and more complex as they continue in the program providing quality information that can be used to examine growth and progress over time.

In essence, the portfolio model responds to a variety of needs – personal, pedagogical, and programmatic – as students progress from admission to graduation. Stakeholders have chosen four main stages for the process, within which students build toward "decision points" in their teacher training. The purpose of the decision points is to demonstrate sufficient mastery of standards for subsequent licensure recommendations. As shown in Table A, these decision points have been articulated at the university level to students and faculty interacting with teacher education.

**Table A: Decision Points Relevant to Portfolio Development**

| Decision Points | Activities/Expectations |
|---|---|
| 1: Builds on successful completion of introductory courses in Teachers College and content areas. | Depending on licensure areas, the student will create a variety of artifacts resulting from successful completion of the introductory course.<br>Reflections on all ten of the INTASC Principles will serve as a baseline for future growth.<br>Artifact Rationales will provide justification for any artifact submitted in the introductory course. |
| 2: Culminates in admission to the Professional Education sequence | This stage focuses on gathering artifacts such as written projects, papers, and evaluations (see category list below) to demonstrate engagement with and mastery of skills leading to formal acceptance into the Professional Education sequence.<br>Reflections on the INTASC Principles are included and should reference prior reflections (Decision Point One).<br>Artifact Rationales will provide justification for any artifact submitted. |
| 3: Culminates in Admission to Student Teaching | During this stage, students select from their body of increasingly extensive artifacts examples that demonstrate sufficient mastery of performance and knowledge relative to content and developmental standards, before admitted to student teaching. The artifacts come from education and content courses.<br>Reflections on the INTASC Principles are included and should reference prior reflections (Decision Point One and Two).<br>Artifact Rationales will provide justification for any artifact submitted in the introductory course. |

| | |
|---|---|
| 4: Culminates in graduation | This final stage adds the student teaching experience. Students will select artifacts generated in classroom performances to add to their prior collection.<br>Reflections on the INTASC Principles are included and should reference prior reflections (Decision Points One, Two and Three).<br>Artifact Rationales will provide justification for any artifact submitted in the introductory course. |

The digital portfolio model was shaped and refined by teacher education faculty representing many colleges across campus, with funding and others support offered from the Ball State University Preparing Tomorrow's Teachers to use Technology (PT3) grant (Stuve & Mullen, 2000). The model is built around the INTASC (Interstate New Teacher Assessment and Support Consortium) principles, state developmental standards, specific content area curriculum standards, and the National Educational Technology Standards (NETS). Thus, as preservice teachers progress through the teacher education program, all courses working with any of these principles or standards would provide a contributing artifact to individual digital portfolios.

## Assessment Design

With the onset of this new digital portfolio expectation for students, a group of nine faculty members representing almost all content or teacher licensure areas was formed to begin the process of shaping digital portfolio assessment. This introductory course group was chosen due to the importance and impact of an introductory course on student achievement within the larger context of a teacher education program (Wolf, 1996). The group's charge was to create an assessment tool that would allow for a cohesive and unified grid of expectations by which all teacher education majors would be assessed.

The group approached the task of shaping the assessment of digital portfolios, via the creation and use of an analytical rubric, identifying that there must be various competencies and categories within the assessment tool (Linn & Gronlund, 2000). In a very generalized approach, the group worked from the premise of Goodrich (1997) that the rubric would not only shape expectations, but also identify critical instructional components. Following are developmental goals and highlights encountered during the interdisciplinary creation of a rubric for the university-wide assessment of digital portfolios.

There were five phases of development for the interdisciplinary digital portfolio rubric. During the first phase, group members were asked to contribute the portfolio rubrics they have used in courses during the past two years of developing and piloting the digital portfolio model. After dissemination of those independently created rubrics, each group member was provided a list of sample portfolios. Given these sample portfolios, members were asked to participate in a mock-assessment with the rubrics that were provided by their peers. This mock-assessment was to provide an opportunity for each group member to interact with the same sample portfolios and understand the complexities of assessment due to the vast differences in layout, content, and professionalism displayed by student authors. This phase was independent in nature. However, in retrospect the authors would suggest that if this type of task seems fitting, it should be facilitated during a group meeting time to insure that all members complete the mock-assessment. The major goal of the mock-assessment was to provide a common conceptual framework from which the group would begin discussions and deliberations.

During the second phase of the rubric creation, group members engaged in a discussion focused on the systems-level use of the rubric. At this stage Teacher Education reform components were presented. In essence, faculty and staff members preparing the digital storage unit at our institution were able to articulate the location, organization, and operational capacities of the collaboratively created Competency Data Engine (Stuve, Modesitt, & Mullen, 2001). During this time group members were instructed on the processes students would use in order to create, post, and access their digital portfolios, artifacts, and other related materials. Since the rubric creation group focused on freshman or transfer students, one

critical issue to be faced during this phase was the level of technical skill that could be universally expected from this level of student. While this issue was thought to be tertiary to the development of a rubric, the group came to the consensus that without an agreed upon expectation of skill, there was virtually no means by which to create a comprehensive assessment tool for digital portfolios. Thus, using exemplars from phase one, the group came to a preliminary consensus as to the relevant and essential technical skills needed by introductory course students.

Working from a common core of current student portfolios, necessary technical skill, and a more comprehensive view of the digital infrastructure in which the digital portfolio would be housed, permitted the group to move to the next phase of rubric development. During phase three, the rubric creation group created the first draft of a digital portfolio assessment tool. Initially, the draft included six criteria including: reflective statement, artifact and rationale for artifact, design, mechanics, and professionalism. These criteria were scaled between four levels of performance. Initially, these six criteria were chosen based upon the digital portfolio model.

The critical analysis of these six criteria alerted the group to two key issues, the first being the issue of required artifact development. At a university level, policy had not been adopted outlining suggested stages for artifact development (i.e., at decision point one each student would have one artifact, etc.). The major concern for the group then was to create a rubric while simultaneously laying the groundwork to propose, establish, and eventually pass policy that would support the ideals of the campus wide efforts in using digital portfolios.

The second issue was to scaffold the expectations of the rubric so that the student teacher portfolio rubric, that was already adopted and implemented, would not be obsolete or out of sequence. Thus, the group moved from establishing a single point of assessment to creating a conceptual outline that focused not only on a point of growth for freshman and incoming students, but also the various other stages of preservice teacher development. Upon completion of phase three, the rubric creation group suggested that one artifact be completed at decision point one, three artifacts be created by decision point two, seven artifacts at decision point three, and ten artifacts (representative of the ten INTASC principles) be available for review at decision point four.

Working from a new understanding of the group's shifting goal, the group of faculty members entered into phase four of rubric development. During this phase faculty were able to focus on current student products, necessary policy, and systems-level thinking that would support the development of an original, progressive, and practical assessment tool for campus-wide use. As rubric development persisted faculty became more critical of the tone of their writing, the ease of generalization across grade levels and content area foci of students, and the attention paid to the lack of contextual limitations within the digital environment.

In essence, during phase four, faculty wavered over concerns of being too detailed or not detailed enough. Consequently, terminology such as "attentive" or "shows" turned to "effectively uses" or "reflecting" creating a more professional tone that emulated high expectations and utilized language commonly used within the teacher education program. Simultaneously, while simple wording was altered, criteria were tapered so that the rubric could be easily generalized amid campus-wide stakeholders. Upon completion of final edits, feedback showed that the group was, overall, very comfortable with the presentation and format of the rubric. As shown in Appendix A, the final rubric allowed faculty to approach this assessment tool as a foundation that could be added to in efforts to individualize within specific colleges or programs within the university.

The final rubric for digital portfolio assessment captured a unified goal and expectation that had been represented in the context of an adopted digital portfolio model, but not in the context of assessment, which is the responsibility of faculty members. This assessment-based representation offered faculty the opportunity to distinguish between content, skills, and products that previously constructed the introduc-

tory courses and those skills products, and content that needed to be included in order for students to establish a point of growth within the context of the digital portfolio.

## Final Remarks

During the fall semester of 2002, this digital portfolio assessment rubric was adopted on a university level. However, as the rubric established an initial point of assessment, the rubric is continually being expanded upon to meet the assessment needs of faculty over the course of the preservice teachers' tenure at the university.

As the group of faculty members that participated in this interdisciplinary approach to digital portfolio assessment continues with implementation and further development, informal initial responses from students and faculty have been positive. Within introductory courses facilitated by the authors, students have benefited from having access to both the conceptual model for digital portfolios and the rubric by which the portfolio will be assessed. Students, with access to these two interdependent tools, are able to identify long-term as well as short-term goals for their digital portfolios. The purposeful connection between the university-wide portfolio model and common digital assessment tools has communicated common expectations and created an organized platform to discuss student progress and expected competencies. Formative assessment will continue to be facilitated at a university wide level. Research is planned to gather information from contributing faculty to determine the usefulness and effectiveness of the tool. Programmatically, the digital assessment environment (Modesitt, Stuve, & Mullen, 2001) allows faculty to provide continuous feedback in terms of the design of the assessment environment itself and the rubric as a useful teaching and learning tool.

Unexpectedly, the creation of this rubric has ignited critical and collaborative conversations concerning access to technology hardware and the availability of faculty and student training. In addition, the focus on assessment versus design encouraged faculty to move from the point of conceptual understanding to a concerted focus on implementation. While we entered into the process of creating the rubric fairly uncertain of the outcomes, the interdisciplinary approach was undoubtedly one of the most critical decisions. This involvement of a diverse group of faculty members allowed for issues regarding instructional preferences and greater curriculum goals of particular teacher education concentration areas to be addressed and infused into the assessment process. Additionally, the interdisciplinary connection contributed to the essential development of a common context for digital portfolios in the introductory level courses, while simultaneously creating the foundation for the development of the contextual fit across courses and programs (Fenton, 1996). Involving various stakeholders contributed to the group's progression from a focus on technical aspects of digital portfolio creation to a focus on communication, application, and articulation of shared expectations. This change in focus supported the previously expressed need to connect the assessment of digital portfolios into departmental programs and established a sense of ownership for faculty campus-wide (Mullen, Bauer, & Newbold, 2001).

While the creation of a rubric seemed to be a fairly simple task, the attention to institutional, political, and instructional influences was critical. Without paying due attention to these three areas, the university-wide creation, adoption, and implementation of an interdisciplinary assessment tool specific to the digital environment would have been insignificant to the greater goals of the teacher education program. Overall, the critical influences to the development of the project were the organization and articulation of the teacher education program via the decision points document, the cohesive and collaboratively created portfolio model, and the interdisciplinary viewpoints that were represented.

During implementation of the digital portfolio assessment tool, continued improvements to the rubric and the articulation of its role in the classrooms of our university colleagues will be explored to insure that experiential reflections of both students and faculty are able to interact with the presentation of the assessment tool.

This article was written as a summary of experiences that can benefit other institutions or faculty members embarking on similar missions. Though research and evaluation activities associated with this assessment tool are in their infancy within our university, the sharing of knowledge, materials, and resources is thought to be critical to the timely and effective use of digital portfolios within the context of a university-wide contingency of stakeholders. For more information regarding the portfolio model, assessment tools for digital portfolios, and related documents consult resources available via the Internet at the PT3 website.

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# Biographies

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# Appendix A: Final Introductory Level Digital Portfolio Rubric

Britten & Mullen - Interdisciplinary Digital Portfolio Assessment

| **Assessment Criteria** | Distinguished | Proficient | Basic | Unsatisfactory |
|---|---|---|---|---|
| Reflective Statements | Student writes in a personal tone that is reflective of independent and original thought.<br>Reflects on his or her own abilities, struggles/limitations, experiences, and goals as a learner or teacher by including concrete examples.<br>Effectively uses the information provided in the knowledge, dispositions, or performance indicators of each INTASC principle. | Student writes in a personal tone that is somewhat reflective of independent and original thought.<br>Reflects on his or her own abilities, struggles/limitations, experiences, and/or goals as a learner or teacher but lacks in detail or does not provide concrete examples.<br>Uses the information provided in the knowledge, dispositions, or performance indicators of each INTASC principle as a basis but does not connect that information to individual understanding. | Student writing lacks independent and original thought, or expression of a personal tone.<br>Does not adequately reflect on his or her own abilities, struggles/limitations, experiences, or goals as a learner or teacher.<br>Does not utilize the information provided in the knowledge, dispositions, or performance indicators of each INTASC principle. | No reflective statement presented. |
| Rationale or justification for artifact(s). | Rationale represents principle, and includes rationale that is convincing to the reviewer.<br>Rationale is presented so that there is a clear connection to the knowledge, dispositions, or performance indicators of the INTASC principle(s).<br>Includes applicable references to two or more sources (text, articles, videos, lectures, class activities, or other reference materials) to support rationale. | Rationale represents principle, includes rationale that is somewhat convincing to the reviewer.<br>Rationale is presented so that there is a general connection to the knowledge, dispositions, or performance indicators of the INTASC principle(s).<br>Includes references to one or more sources (text, articles, videos, lectures, class activities, or other reference materials) to support rationale. | Rationale is included but connection to principle is unclear or not convincing to the reviewer.<br>Rationale is presented so that there is a minimal connection to the knowledge, dispositions, or performance indicators of the INTASC principle(s).<br>No references included to support rationale. | No rationale is included or rationale is presented so that there is not a connection to the knowledge, dispositions, or performance indicators of the INTASC principle(s). |

Britten & Mullen - Interdisciplinary Digital Portfolio Assessment

| **Assessment Criteria** | Distinguished | Proficient | Basic | Unsatisfactory |
|---|---|---|---|---|
| Design | Attentive to the following design components in the digital environment:<br>o Font and Background<br>o Color<br>o Images displayed<br>o Layout consistent<br>o Functional links<br>o Type easy to read<br>o Expresses creativity and/or individuality in work<br>o Designed for easy use (access and navigation) | Attentive to some but not all of the design components in the digital environment. | Displays a minimal understanding of design components in the digital environment. | Not attentive to design components. |
| Makes use of digital environment | Uses hypertext to organize portfolio content.<br>Successfully publishes portfolio to digital student folder on the Teachers College server. | Utilizes hypertext, but hypertext does not aid in the organization and presentation of the portfolio content.<br>Successfully publishes portfolio to digital student folder on the Teachers College server. | Utilizes hypertext, but does not show a clear understanding of the opportunities that exist for connecting portfolio components in the digital environment.<br>Successfully publishes portfolio to digital student folder on the Teachers College server. | Does not utilize hypertext to organize portfolio.<br>Does not publish portfolio to digital student folder on the Teachers College server. |
| **Assessment Criteria** | Distinguished | Proficient | Basic | Unsatisfactory |
| Mechanics | Spelling, grammar, sentence structure, punctuation, and capitalization are correct. | Spelling, grammar, sentence structure, punctuation, and capitalization are presented with errors that somewhat detract from the overall presentation. | Spelling, grammar, sentence structure, punctuation, and capitalization errors detract from presentation and goals. | Unacceptable use of spelling, grammar, sentence structure, punctuation, and capitalization. |
| Professionalism | Attentive to audience.<br>Displays maturity and professionalism.<br>Tailors products to academic and scholarly environment. | Somewhat attentive to audience.<br>Displays some commitment to professionalism, however could benefit from an altered presentation.<br>Product format needs improvement in order to be acceptable in an academic and scholarly environment. | Is not presented as a personal web page.<br>Needs improvement in order to be considered a professional product. | Portfolio takes form of a personal web page that does not exemplify or make apparent the professional purposes. |
| Artifact | Submitted to CDE. | Submitted to CDE. | Submitted to CDE. | No artifact submitted to CDE. |