

## **AC 2008-348: USING E-PORTFOLIOS FOR PROGRAM ASSESSMENT: SOME OBSERVATIONS**

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# Using E-portfolios for Program Assessment: Some Considerations

## Abstract

In the Internet age, electronic portfolios (e-portfolios) are growing in popularity in colleges and universities across the nation. E-portfolios have been incorporated in higher education to facilitate many aspects of education such as student learning, student achievement, and program assessment. This paper provides a direct insight into the value of e-portfolios in the overall higher educational process including program assessment. What is an e-portfolio, and how does it differ from the more traditional paper-based portfolio? E-portfolios go far beyond collection of artifacts, and are seen as a dynamic tool for constructive learning and future planning such as career goals. Development of the e-portfolios starts early during the educational process and may require evaluation at different stages of the E-portfolio preparation, such as the initial review during the sophomore year, mid-level review during the junior year, and the final review during the senior year. This paper describes the design considerations in the creation of good e-portfolio in the context of reflection and assessment of the effectiveness of a course or an educational program, and the design considerations that go into the creation of a good portfolio. The framework of e-portfolios depends on the end user of the portfolio.

## Introduction

Electronic portfolios (e-portfolios) are ‘in’ and the traditional paper-based portfolios are ‘out.’ This is due to the internet age, and the web-based technology has made it all possible. Both the Academia and industry are the beneficiaries of the digital age, and so is higher education in particular and a myriad of academic programs.

What is an e-portfolio? How does it differ from a traditional paper-based portfolio? According to Wikipedia, “An electronic portfolio, also known as an e-portfolio or digital portfolio, is a collection of electronic evidence assembled and managed by a user, usually on the Web. Such electronic evidence may include inputted text, electronic files such as Microsoft Word and the Adobe PDF files, images, multimedia, blog entries, and hyperlinks. E-portfolios are both demonstrations of the user’s abilities and platforms for self-expression, and, if they are online, they can be maintained dynamically over time.....E-portfolios have an edge over the traditional, paper-based variety because there is a considerable increase in the range and quality.”<sup>1</sup>

In higher education, e-portfolios have been incorporated to facilitate several aspects of education such as student learning, student achievement, and program assessment. E-portfolios are being used by schools of teacher education, engineering and technology, medicine, arts, and others for a variety of reasons. Schools of education have used e-portfolios not only as learning and assessment tools for pre-service teachers but also for accreditation purposes. Some schools of higher education have been using electronic portfolios to showcase examples of student work and to report data required by external accreditation agencies such as National Council for Accreditation of Teacher Education (NCATE), Accreditation Board for Engineering and Technology (ABET), and regional accreditation agencies such as North Central Association of Colleges and Universities (NCACU). E-portfolios go far beyond collection of artifacts, and are

seen as a dynamic tool for constructive learning and future planning such as career goals. To deliver what an e-portfolio intends to deliver at successive stages, the purpose of the e-portfolio must be clearly defined at the outset in un-ambiguous terms. The framework of e-portfolios for student learning including development of critical thinking skills, student achievement, and program assessment hinges on student and faculty interaction and participation; it calls for review of e-portfolios at pre-determined intervals, such as the initial review during the sophomore year, mid-level review during the junior year, and the final review during the senior year. Also, equally important is the rubric for evaluation of the e-portfolios to maintain consistency in the overall assessment.

### **Student-Centered ePortfolios**

There are three types of ePortfolios according to a report from David DiBiase and others.<sup>2</sup> Because ePortfolios have different aspects associated with them, they have different intended purposes and are accordingly named. The above report defines the three types of ePortfolios as follows:

*“Student learning portfolios* are purposeful collections of examples of student work annotated (ideally) with students’ reflective commentary. Examples may be drawn from assignments associated with a single course, or from curricular and co-curricular activities spanning a student’s entire academic career.”

*“Teaching Portfolios* consist of course syllabi, assignments, student work, and other artifacts, collected by practicing or aspiring teachers with the intent of fostering self reflection and peer review of teaching. Like learning portfolios, teaching portfolios may be comprehensive or they may focus upon individual courses.”

*“Institutional portfolios* contain examples of an institution’s activities, programs, and initiatives, each expressing an element of reflection and self-assessment. Through its portfolio, an institution documents how it is achieving its stated mission by examples that speak to the interests of various audiences.”

This paper addresses only the student learning portfolios, which in simplistic terms, are student-centered. During the preparation of the student-centered portfolios, instructors of individual courses instruct students to collect, include, and reflect on learning achieved which then can be assessed during the review process. It is suggested by the authors that instructors’ course syllabi clearly assign points for e-portfolio preparation, encourage creativity, and provide criteria for evaluation.

### **The 4-Step Process to Creating ePortfolios**

Creating an ePortfolio helps students reflect on their accomplishments, discover key themes in their experiences, clarify in their mind what they learned and what is important to them. The process of reflection promotes critical thinking and evaluation and propels them into action to take steps to establish their future goals...it emerges as a cycle of discovery (about themselves)

and a plan of action. As a simple rule, the following 4-Step process is advisable to create an ePortfolio:

1. Attend an ePortfolio Workshop
2. Get explicit directions to create an ePortfolio
3. Catalog artifacts from different courses
4. Create your ePortfolio folder on the institution's server

E-portfolio workshops are provided by institutions. These workshops should be scheduled during the regular class periods to facilitate student attendance. These workshops provide directions for creating ePortfolios. The directions for format and organization of the ePortfolio should be provided by the instructor of the course utilizing the ePortfolio. Students are likely to struggle initially but will be quick to grasp the steps.

### **Catalog Artifacts from Different Courses**

Every academic field differs in terms of what artifacts are considered relevant and what should be included in the ePortfolio. For engineering and technology fields, projects and reports of projects are considered essential. For journalism, newspaper articles are important. For teacher education programs, lesson plans, philosophy of education, and reflection papers are desirable and necessary. Photographs and awards are common features, and so are the recommendation letters. Service-Learning projects are becoming important in all the academic fields and are good items for inclusion. In a sense, artifacts become the database that gives an overall picture of the student to the reviewer. It defines the quality of work. With a proper rubric, evaluation of the student work can be assessed. It is suggested that that rubrics for assessment be developed by faculty, and are simple to use. Rubrics that are less time-consuming and simple to use provide assessment information in more usable and reportable information. There should be a mechanism for giving feedback to students for improving the quality of the ePortfolios, which indirectly calls on students to re-reflect, revise, and re-write. Writing to learn better and comprehend the subject matter in depth improves students' critical thinking skills, and enhances effectiveness of their learning outcomes.

### **Asking the Right Questions in Planning ePortfolios**

In higher education while the accrediting agencies may not require academic programs to develop ePortfolios, many schools have adopted ePortfolios to display student work. It is also up to the academic programs to use or not use ePortfolios as tools of assessment. There are many tools of assessment, such as, Student Exit Surveys, Exit Examinations, National Tests (for example, FE/EIT for engineering), Graduate Surveys, Employer Surveys, Traditional Portfolios (still relevant in arts and architecture), and ePortfolios. Qualitative assessment is not considered sufficient for assessment of academic programs. Quantitative assessment utilizing rubrics to satisfy accreditation criteria has become a norm and a requirement for outcomes based criteria; therefore, rubrics should be utilized and statistical evaluations done to report assessment results to accreditation agencies. For Example, according to accreditation criteria of the Accreditation Board for Engineering and Technology, the 2007-08 Technology Accreditation Criteria for evaluating engineering technology programs states, "Assessment measures typically consist of,

but are not limited to, student portfolios, student performance in project work and activity-based learning, .....results of nationally-normed examinations; results of surveys to assess graduate and employer satisfaction.....”<sup>3</sup>. It is left to the institutions to provide documented results to demonstrate that program objectives and outcomes are being met.

It is also acceptable to utilize ePortfolios to display student work in addition to other methods and yet, not use ePortfolios as an assessment tool. But, if ePortfolio is used as an assessment tool, then it has to meet certain criteria. “Penn State University’s Informational Technology Services provides every Penn State student, regardless of program or campus location, with the resources necessary to create an ePortfolio. Every student is allocated up to 1 GB of online storage space. Students can apply for a web folder within this storage space. This is offered at no charge by ITS. Digital files copied into this web folder are accessible by any internet web browser.”<sup>4</sup> According to David DiBiase, Director of e-Education Institute at Penn State, ePortfolios provide many benefits to faculty, students, and the institution...some of those benefits are:

#### Benefit to Students

- a. Enhancement of their IT skills
- b. Enhanced Learning
- c. Ability to see their own growth as learners

#### Benefits to Faculty

- a. Assessment of course or program objectives

#### Benefits to Academic Departments

- a. Transparency in Student Work Display for accountability
- b. Accreditation

#### Benefits to the Institutions

- a. Data Collection and Reporting for Accreditation
- b. Transparency and Accountability

### **Rubric for Assessment of ePortfolio Quality**

Students have a wealth of materials for display to provide evidence of their learning. The evidence can be related to their mastery of knowledge and skills. The purpose of display is to show the audience students’ proficiency in the areas that faculty deem necessary whether it relates to their writing skills, problem-solving skills, critical thinking exercises, or team projects, or oral presentation skills.

The quality of ePortfolios can directly be controlled through a process of review at successive stages of preparation. Over a span of four years which is the duration period for a baccalaureate

degree, it is logical to have the students prepare their first ePortfolio during the sophomore year, and the first review, referred to as the Initial Review, conducted at the end of the sophomore year. Freshman year is a trying time for many freshmen students, and not all students are aware of the need for collection for artifacts; therefore, ePortfolios should be launched during the sophomore year. The following table provides a simple matrix that shows the preparation and associated review timelines.

**Table 1:** ePortfolio Review/Assessment

ePortfolio Level	Preparation Period	Review Period	Quality Characteristic		
			S	M	U
Initial	Sophomore Year	Winter/Spring Semester	S	M	U
Intermediate, or Mid-Level	Junior Year	Winter/Spring Semester	S	M	U
Final	Senior Year	Winter/Spring Semester	S	M	U

S – Satisfactory      M – Marginal      U - Unacceptable

Note: In the rubric for evaluation criteria of the ePortfolio, S can be set at 80 to 100, M at 70 to 80, and U below 70.

**Rubric for Assessment of ePortfolio Content**

Rubrics that are simple to use, and less time-consuming to score are essential to the success of assessment of the content in student portfolios. The assessment rubrics must be developed by faculty teams and be acceptable to faculty. The assessment rubrics must be based on sound criteria of measurement to facilitate scoring. Since faculty have to judge artifacts such as essays, lesson plans, oral presentations, problem solving, team-work, group skills, project design, etc., which are likely to have subjective components to assessment, it is of paramount importance to keep the language in rubrics as un-ambiguous as possible. The following basic and simple rubric outline can be modified and adapted to establish the evaluative criteria for an educational outcome.

**Table 2:** An Example of an Assessment Rubric for Presentation Skills

Metric	Satisfactory S	Marginal M	Unacceptable U	Points P
Organization				
Material Content				
Visuals				
Speech				
Total Points				

Performance Criteria: Establish for S, M, and U.

## **General Components of Evaluation Criteria for ePortfolios**

The overall quality of ePortfolios must meet certain basic criteria such as, consistency in fonts, sizes, and contrast. The self interpretation of learning by students is an important theme of the ePortfolio, and should be so evident. There should be room for demonstrating student creativity, and should be encouraged within the established guidelines.

On the basis of the established performance criteria, student ePortfolios can be accepted or rejected during the first two review stages (initial, intermediate or mid-level). The final ePortfolios are less likely to fail if appropriate steps are taken by students to use the instructor-given feedback to improve the quality of their work.

## **Our Experience with ePortfolios**

At the first author's institution where another department has had substantial experience with traditional paper-based portfolios and ePortfolios, students are required to develop both kinds of portfolios because of the differing expectations of employers. Students use the Composer Web Editor inside Netscape to develop on-line web portfolios. It is a simple and convenient way to collect and document student work, and to link it to applicable accreditation standards. Our department is in the process of transitioning to on-line Web ePortfolios, and it will be quite straight-forward to link student assignments and student work to TAC/ABET criteria 'a' through 'k.' A basic template for evaluating student work using a standard scoring guide will be utilized for assessment. During the recent TAC/ABET accreditation visit at the first author's institution, traditional student portfolios were displayed, and the evaluators were quite impressed by the quality of work displayed in the portfolios. The co-author of the paper has had more experience with development and evaluation of ePortfolios; therefore, has given guidance, and provided useful information on ePortfolios and made suggestions as to how experiences of one department and institution can help another department at another institution. Institutions desiring to undertake ePortfolios should utilize knowledge base of faculty at other institutions to avoid re-inventing the wheel. The authors feel that students, via clearly defined assignments and reflections, can effectively demonstrate their learning and their ability to synthesize.

## **Conclusion**

For successful outcome of ePortfolios, it is important that students be given clear directions as to the purpose of the ePortfolio, the audience that their ePortfolio is directed to, and how will the ePortfolios be reviewed and assessed; this needs to be communicated at the very initial stages of the development of ePortfolios at the sophomore-level. An appropriate mechanism to give feedback to students to make improvements in the ePortfolios as they progress from one level to the next must be a part of the rubric developed and used for assessment.

## **Bibliography**

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