

# Student Perspective of Organizational Uses of ePortfolios in Higher Education

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**Abstract:** With the proliferation of ePortfolios in higher education, it is important for educators and other stakeholders to understand the perspective of the primary users of ePortfolios – the students. ePortfolios are student-centered devices and the ways students view, use and implement ePortfolios are revealing elements to aid educators in the successful implementation of ePortfolios systems in their learning environment. To this end, we describe the development of the Electronic Portfolio Student Perspective Instrument (EPSPI) and present the descriptive results of a first major data collection ( $N=204$ ) effort using EPSPI in a college of education. The EPSPI incorporates four domains related to ePortfolios from a student perspective: employment, visibility, assessment, and learning.

## Introduction

Art and communication students have a long history of using portfolios to display their work. Within these disciplines, faculty encourage their art and communication students to organize their collection of work over a period of time, in essence creating a portfolio, and to display their portfolio to friends, family and potential employers. The objective is to not only use the portfolios as a display of work over a period of time, but also to create a lifelong collection that is representative of changes and growth in ability. Today, with the increased use of the Internet, easy access to databases, and lower costs of personal computers, institutions of higher education are choosing to incorporate electronic portfolios into their curriculum (Batson, 2002; Lorenzo & Ittelson, 2005). The short term used to describe an electronic portfolio is “ePortfolio”.

Researchers believe that organizations are using ePortfolios to serve students in three ways, known as the three “R”s (Acker, 2005; Lorenzo and Ittelson, 2005): representation, reflection and revision. Representation, the first “R”, refers to the use of ePortfolios as a means of recording student products and skills acquired over time. The second “R”, reflection, emphasizes how self-critique and feedback from faculty and peers can enrich the learning experience of students. And finally, revision, which is the third “R”, is when the student takes the step to improve his/her products or skills using the feedback or critiques received from faculty or peers.

There is still much discrepancy in defining an ePortfolio (Greenberg, 2004). According to the National Learning Infrastructure Initiative (NLII, 2003) an ePortfolio can be defined as “a collection of authentic and diverse evidence drawn from a larger archive representing what a person or organization has learned over time on which the person or organization has reflected, and designed for presentation to one or more audiences for a particular rhetorical purpose” (Love et al. 2004). Another definition from Lorenzo and Ittelson (2005) state that ePortfolios are “digitized collection of artifacts including demonstrations, resources, and accomplishments that represent an individual, group or institution”. Although, there have been and will be many attempts at defining ePortfolios, thus far, a combination of definitions make reference to one or more of the following elements: it is a personal collection of work over time, it is in a digitized format, an intended audience, and it encourages reflection, feedback and learning.

## **Organizational Uses of ePortfolios**

With the bulk of students work in a digital format, ePortfolio systems are becoming more prevalent in higher education (Batson, 2002). Educational institutions can use ePortfolios systems for a variety of organizational purposes, which might include: assessment of student learning outcomes, accreditation, the promotion and tenure process, increased communication, and to build strong relationships with industry and the community. Faculty and administration are noticing the potential benefits of ePortfolios and are encouraging students to keep a collection of their work to display skills acquired throughout their academic career. In a more formal process, some institutions are integrating ePortfolios in the curriculum as a graduation requirement. For instance, in some college of education programs, pre-service teachers use their ePortfolios “to provide evidence of competencies in various certification and licensure” (Lorenzo & Ittelson, 2005).

From an assessment and accreditation perspective, ePortfolios appear to be a silver bullet to faculty and administration. Since there is a high demand for the demonstration of student outcomes, many higher education institutions are using ePortfolios as assessment tools in the curriculum, and to serve as a wide body of evidence to for the accreditation processes (Lorenzo & Ittelson, 2005). ePortfolios are an alternative form of assessment and are often considered to be a more authentic form of assessment (Siemens, 2005). Faculty and administration understand that ePortfolios can “create an assessment trail that is centralized and under learner control” (Siemens, 2005). The assessment trails can then, theoretically, be sampled from and evaluated by accreditation organizations.

ePortfolios have also been discussed in the literature as a means to aid in the tenure and promotion process and to increase communication (Gibson & Barrett, 2003; Siemens, 2004). Faculty members have long been encouraged to develop elaborate teaching portfolios that demonstrate scholarship of teaching (Edgerton, Hutchings & Quinlan, 1991). These portfolios, now in a digital form, would theoretically enable faculty to communicate their expectations to current or future students, and also demonstrate scholarship to tenure and review committee. Furthermore, ePortfolios could be used to strengthen ties with the local workforce by showcasing student skills and competencies acquired in the curriculum and also to demonstrate the unique qualities of an institution.

Although institutions of higher education can use ePortfolios to further their own agenda, it is important to remember that an ePortfolio is a student-centered device, which brings to light the question of institutional versus learner control. The goal of an ePortfolio system should be to provide students as much control, while still meeting organizational needs. Siemens (2005) agrees by noting that although education institutions can introduce the concept, it must be driven by the learners understanding of ePortfolios to their “learning and development process”.

## **Student Uses of ePortfolios**

ePortfolios offer students many benefits (Batson, 2002; Gibson & Barrett 2003; ePortfolio Consortium, 2003; Siemens, 2004; Acker, 2005; Lorenzo & Ittelson, 2005), which might include: (i) increased career preparation; (ii) enhanced information technology skills; (iii) feedback from faculty and peers; (iv) documentation of knowledge, skills and abilities; (v) increased development of writing and multimedia communication skills; and (vi) provides a link for students to their alma mater after graduation. This list of benefits is not exhaustive, but provides insight as to why institutions of higher education are making changes to inculcate ePortfolios into their curricula. Further, it provides an understanding of why a student perspective about how organizations use their ePortfolio is important.

In analyzing how ePortfolios are being used by students, the authors have identified four meaningful ways students use ePortfolios: to learn, to be assessed, to display their work, and to gain employment (Ritzhaupt & Singh, 2005). The learning process is enhanced when the students have to organize their work, and have it assessed by faculty (Batson, 2004). Meaningful feedback from faculty provides the student with the opportunity to reflect upon their work and improve their understanding. Since ePortfolios are used by the students to collect and display their work, it is a natural progression to also use the tool to showcase their knowledge and skills to potential employers, family, and friends.

Student perspectives’ of the organizational uses of ePortfolios is undiscovered territory. Considering the growing prevalence of ePortfolios, it is unfortunate that there have been few research studies that have focused on the students’ perspectives. Various stakeholders such as faculty, administration and industry acknowledge that ePortfolios are student-centered. Therefore, more research is necessary to determine (i) how students react to ePortfolios (whether it is a positive or negative), (ii) whether students think ePortfolios are useful tools, (iii) how students would like to use ePortfolios now and in the future, and (iv) student attitudes towards the organizational use of ePortfolios. By knowing the students’ perspectives, faculty and administration stand a better chance of successfully implementing ePortfolios into their curricula.

## Method

### Participants

A college of education at a large southeastern public university piloted an ePortfolio system in its curriculum with approximately 700 students using the system primarily in an early childhood education department (99% of the sample). A representative sample ( $N=204$ ) drawn from this population completed this instrument anonymously. Of the respondents, approximately 95% were female. Approximately 50% of the respondents reported senior classification, 25% junior classification, and the remaining 25% graduate. Of the ethnicity of the respondents, 78% reported Caucasian, 11% Hispanic, 5% African American, and the remaining 2% reported either Asian or Other. The participants reported using the ePortfolio system for an average of 9.77 months ( $SD=5.51$ ). The ePortfolio system had been in use for 18-months when the instrument was released.

### Instrument Development

This study was the first major data collection effort in the instrument's development process. The initial item pool was developed using an extensive literature search (Ritzhaupt & Singh, 2006). Four prominent domains were identified in the literature relating to ePortfolios from a student perspective: learning, assessment, employment, and visibility. Four primary stakeholders were also identified: students, administrators, faculty, and employers. Table 1 summarizes the stakeholders in relation to each of the domains of interest, and Figure 1 visualizes the relationships. In a previous study, the instrument was released on a small sample ( $N=22$ ) of students in a computing science program for field testing purposes (Ritzhaupt & Singh, 2006). The instrument was reviewed by a focus group of 15 doctoral students in an advanced educational measurement course and later formally reviewed by two measurement and research and two instructional technology faculty members. The revised instrument had 40-items. Respondents in the sample were required to create an ePortfolio as part of a course requirement.

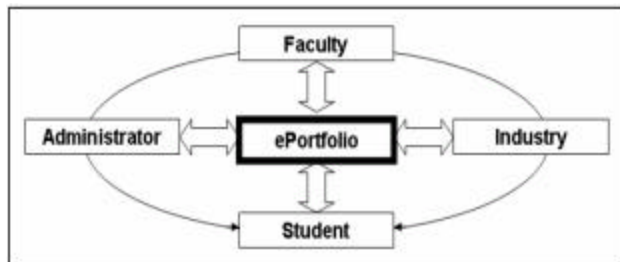


Figure 1. ePortfolio Stakeholder Interaction  
Source: Ritzhaupt and Singh (2005)

Stakeholder	Examples	Constructs
Industry	Potential employers, managers, HR personnel.	Employment Visibility
Faculty	Professors, instructors, graduate assistants.	Assessment Visibility
Administration	Academic advisors, chairs, accrediting boards, deans.	Assessment Visibility
Student	Students, peers, cohorts.	Learning Visibility

Table 1. Stakeholder Example and Constructs  
Source: Ritzhaupt and Singh (2005)

The instrument was once again tailored for the new population of students in the college of education. The research team removed any items that were not relevant to the new population and revised the language of the items. For example, the item "I feel comfortable with my ePortfolio 'searchable' on the Internet" does not apply to the ePortfolio system used by the target population because it has security configurations that makes it inaccessible on the Internet unless the student provides a secured hyperlink. Further, three students in the target population were cognitively interviewed to validate the intended meaning of the items. The revised instrument, named the Electronic Portfolio Student Perspective Instrument (EPSPI), contains 34 items. Each of the items is presented in a modified Likert scale (Strongly Disagree; Disagree; Neither Agree, Nor Disagree; Agree; and Strongly Agree) with a not applicable response option. The overarching goal of the EPSPI is to capture critical information related to student perspectives and intended uses of ePortfolios to aid faculty and administration in the decision-making process.

### Procedure

The instrument was accessible in a web-based format. The investigators made arrangements to post a hyperlink to the instrument in the announcements section of the ePortfolio system and sent an email with a hyperlink to the instrument to all students using the system. Faculty members using the ePortfolio system were encouraged to ask their students to respond to the anonymous survey online. The survey was available for a three-week period, and during this time, two emails were sent to students using the ePortfolio system. Respondents were informed the purpose of the research was to: (1) monitor the progress of the ePortfolio initiative, and (2) aid in the development and validation of an instrument designed to measure student attitudes and intended uses of ePortfolios. Participants were informed that the survey was anonymous and that the information would not be divulged in any way.

**Table 2 – Factor and Item Descriptive Statistics**

Items	M	SD	S.D.	D.	N.	A.	S.A.	ITC
<b>Learning Domain</b>	<b>2.06</b>	<b>1.06</b>	% in categories					
1) I would use an ePortfolio to help me develop my skills (eg., word processing).	1.79	0.92	46.57	33.33	12.75	5.88	0.49	0.68
2) I would use an ePortfolio as a way to monitor my skills as they develop over time.	2.06	1.10	39.71	32.35	10.78	16.67	0.49	0.81
3) I would use an ePortfolio to help me develop my knowledge (eg., European History).	1.77	0.91	46.57	36.76	10.29	5.39	0.98	0.70
4) I would use an ePortfolio as a way to monitor my knowledge as it develops over time.	2.16	1.19	37.75	30.88	11.27	16.67	2.94	0.82
5) I think viewing my peers' ePortfolios would be a valuable learning experience.	2.90	1.29	21.08	18.14	17.65	36.27	6.86	0.48
6) I would use an ePortfolio to guide my skill development.	2.12	1.06	34.80	33.33	15.20	15.69	0.00	0.77
7) I would be concerned about my ePortfolio becoming a form of "busy work" – a collection of "electronic worksheets."	2.10	1.19	38.24	33.33	13.73	7.84	6.37	0.25
8) I use my ePortfolio to learn from my mistakes.	1.90	0.95	41.18	34.31	15.20	7.35	0.49	0.75
9) I plan to continue to enhance my ePortfolio for life-long learning.	1.78	0.95	50.98	25.98	17.16	5.39	0.49	0.67
10) I would use an ePortfolio to guide my knowledge development.	2.01	1.03	38.73	32.35	16.18	11.27	0.49	0.81
<b>Assessment Domain</b>	<b>2.65</b>	<b>1.25</b>						
11) I am comfortable with an accrediting agency looking at my ePortfolio for accreditation of the school I attend (Accrediting agencies are external organizations that ensure that education provided by institutions of higher education meets acceptable levels of quality).	3.11	1.24	16.67	12.25	22.06	39.22	8.82	0.63
12) I would feel comfortable with an accreditation agency examining faculty evaluations of my ePortfolio work.	3.06	1.24	17.65	13.24	20.10	42.16	6.37	0.64
13) I feel that an ePortfolio is a better way for faculty to assess my knowledge than a multiple choice test.	3.02	1.35	20.59	13.73	19.61	31.86	12.25	0.72
14) I feel comfortable if an ePortfolio is used as part of a capstone course in my program of study (eg., It is required that you develop an ePortfolio for your internship).	2.18	1.21	39.22	26.96	12.75	17.65	2.94	0.77
15) I would be comfortable with an ePortfolio used as an assessment tool by faculty for an assignment in a course.	2.54	1.28	29.41	23.04	15.20	27.94	3.92	0.84
16) I feel comfortable with an ePortfolio used as an assessment tool by faculty for part of my grade in a course.	2.49	1.26	30.39	23.04	15.20	28.43	2.45	0.82
17) I use the faculty comments about my ePortfolio as constructive criticism.	3.00	1.24	18.63	10.78	22.55	37.25	5.39	0.59
18) I would be comfortable with an ePortfolio used as a graduation requirement to my program of study (eg., It is required that you develop an ePortfolio to complete your program of study).	1.95	1.23	53.92	15.69	11.76	14.22	2.94	0.71
19) I feel that an ePortfolio is a better way for faculty to assess my knowledge than an essay test.	2.72	1.34	26.96	17.16	20.10	26.47	8.33	0.75
20) I am comfortable with an ePortfolio used as an assessment tool by faculty in other courses.	2.54	1.22	27.94	19.61	25.00	24.02	2.94	0.81
21)* I am concerned that assessment of my ePortfolio would be too subjective and too open to errors in judgment.	2.67	1.18	16.67	29.90	23.53	18.14	6.86	0.28
22) I feel that an ePortfolio is a good way for faculty to assess my knowledge.	2.54	1.22	25.49	24.51	15.20	28.92	1.47	0.81
<b>Employment Domain</b>	<b>2.55</b>	<b>1.23</b>						
23) I would use an ePortfolio as a snapshot of my knowledge and skills to show potential employers.	2.51	1.27	28.43	23.04	16.67	24.02	4.41	0.81
24) I think my ePortfolio would be beneficial to me getting a job.	2.33	1.18	30.39	25.49	21.08	16.18	2.94	0.79
25) I think potential employers will wonder about the degree to which my ePortfolio really reflects my independent work.	2.80	1.26	15.20	28.92	22.55	16.67	11.76	0.03
26) I would feel comfortable if an employer requested to see my ePortfolio to aid in the hiring process.	2.93	1.24	18.63	14.71	22.06	34.80	5.39	0.65
27) I would use an ePortfolio as an electronic résumé to	2.36	1.23	30.88	26.96	15.69	19.12	3.92	0.86

show potential employers.									
28) If I were an employer, I would use an applicant's ePortfolio, if available, to aid in the hiring process.	2.39	1.20	30.39	22.55	20.10	21.08	1.96	0.79	
<b>Visibility Domain</b>	<b>2.62</b>	<b>1.22</b>							
29) I would be comfortable with faculty evaluations of my work posted to my ePortfolio as long as only I could view them.	3.14	1.19	13.73	13.73	21.08	41.18	6.86	0.56	
30) I would feel comfortable with my teachers showing my ePortfolio to other teachers.	2.78	1.20	21.57	16.67	21.57	35.29	1.47	0.56	
31) I would use an ePortfolio to showcase my work to my family.	2.26	1.21	33.33	26.96	14.71	16.67	3.43	0.74	
32) I would use an ePortfolio to showcase my work to my friends.	2.24	1.19	33.82	26.96	15.20	16.18	2.94	0.70	
33) I would feel comfortable with my teachers showing my ePortfolio to potential employers.	2.61	1.26	26.47	19.61	17.16	29.41	2.94	0.64	
34) I would be concerned about the confidentiality of my ePortfolio.	2.67	1.25	19.12	28.43	21.57	16.67	9.31	0.04	

*M = Mean, SD = standard deviation, categories in percentages, S.D. = Strongly Disagree, D. = Disagree, N. = Neither Agree, Nor Disagree, A. = Agree, S.A. = Strongly Agree, ITC = Item-to-Total Correlation, \*Negatively stated items.*

## Results and Discussion

Prior to interpreting the results of this study, the context in which the sample was taken should be emphasized. The pilot program for the ePortfolio system included a provision that the development of an ePortfolio be a graduation requirement for all students in the elementary education program (99% of the sample) to demonstrate teaching competencies. This sample is representative of the students in the program during this transition. While there has been much discussion about using ePortfolios to meet organizational needs, we believe the descriptive results justify the need to develop a valid and reliable instrument to measure the student perspective prior to integration of an ePortfolio system into the curriculum.

The item response distributions exhibit reasonable normality with skewness for all items within the range of +/-1 and kurtosis for all items fall within the range of +/-1.5. The Cronbach alphas for learning, assessment, employment and visibility are .9, .93, .85, and .76, respectively. All related domains have reliability measures above the acceptable social science threshold (>0.7) (Nunnally, 1978). All negatively stated items were reversed for descriptive and reliability analysis. Table 2 provides descriptive statistics describing the response frequency percentages, the item-to-total correlations, average and standard deviation of the item responses, and subscale averages and standard deviations.

As the descriptive statistics show, the subscale mean for the learning, assessment, employment, and visibility domain is 2.06 (*SD*=1.06), 2.65 (*SD*=1.25), 2.55 (*SD*=2.55), and 2.62 (*SD*=1.22), respectively. All the subscales of interest are below the central point (<3), indicating that students may not perceive this particular ePortfolio system as a valuable tool. These are less than favorable results to faculty and administration. However, we preface the interpretation of these findings with qualitative evidence that the integration of system in the curriculum may not have been a successful instantiation.

An open ended item was placed at the end of the web-based instrument to elicit information that may not have been investigated within the scope of the instrument. Of the sample, 91 respondents provided free form comments. Among the responses, many troubling themes were identified, which include: a lack of support structure for training on how to use the system, a lack of understanding and buy-in from faculty members using the system, a lack of value in regard to the annual subscription (\$45), an overly complex user interface, and the expectation that all students should implement an ePortfolio as a graduation requirement.

In light of this information, the authors believe that the low subscale means are representative of user resistance to system change and a poor implementation of the ePortfolio system. User resistance to change is a well-established problem in Information Systems research (O'Hara, Watson and Kavan, 1999) and refers to a problem when a group is forced to transition from one information system to another. Students in their sophomore, junior, and senior year fell in a transition period during the ePortfolio system implementation. These students were required to develop an ePortfolio as a graduation requirement and were not necessarily communicated this requirement prior to enrollment into the college. It seems reasonable that the students would resist the change. Further, the open-ended responses provided evidence that many of the problems students faced in using the system were at an organizational level. For example, students would submit their work to the ePortfolio system and the faculty would not assess the work using the system.

While this ePortfolio system does act as a manifestation of an ePortfolio system to the student, it is quite conceivable that the low responses can be attributed to these problems. In retrospect, it would have been valuable to sample the population using the EPSPI prior to integration in the curriculum. Further, it may have been better received by students if it was not a graduation requirement for students in a sophomore to senior classification. Only new students entering the program would have been given the requirement, and the other students could optionally use the system. The authors do not want this research paper to communicate that ePortfolio systems are inadequate for higher education. Rather, the authors believe that faculty and administration should be mindful of student concerns as they relate to ePortfolios.

### Limitations and Future Research

This was the first major data collection effort for the EPSPI. This paper has only presented the descriptive statistics of the sample. No statistical inferences or sophisticated validity evidence is provided. An analysis of the inter-item correlations indicated that reliability would not be advantageously increased by the removal of items, and thus none were removed at this point in the development process. Due to the narrow sample size (primarily females in the college of education), few of the descriptive statistics can be stated with any practical significance to other colleges and programs, or ePortfolio system implementations.

The authors plan to provide validity evidence of the instrument using the sample by conducting confirmatory factor analysis on a predefined a priori model. Revisions to the instrument will be made at this junction. Unfortunately, the demographic information collected is not diverse enough to detect bias or draw meaningful statistical inferences among groups. Plans have been made to release the revised instrument on a much larger cross disciplinary population in the subsequent year. The unifying variable will be that the students, in some capacity, have developed an ePortfolio as part of their program of study. The researchers also intend to research the perspectives of other potential stakeholders, which include: faculty, administration, and industry representatives. The authors believe that only with a complete understanding of these perspectives, will we successfully and meaningfully integrate ePortfolios in the curriculum.

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