Validation of the Electronic Portfolio Student Perspective Instrument (EPSPI): Conditions under a Different Integration Initiative

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Abstract

With the explosive growth of e-portfolios in teacher preparation programs, it is essential for administration and other relevant stakeholders to understand the student perspective of e-portfolios' organizational uses. This article describes the validation of the modified Electronic Portfolio Student Perspective Instrument (EPSPI). The analysis includes descriptive analyses, exploratory factor analysis, and internal consistency reliability analyses. The article also reports the second major data collection effort involving preservice teachers (N = 224) in a southeastern public university. Results suggest that student perspectives toward e-portfolios are multidimensional, involving four distinct and highly internally consistent underlying constructs accounting for 69% of the cumulative variability: learning, assessment, visibility, and support. This research provides further evidence that the EPSPI is a reliable measurement system. Recommendations for future research are provided. (Keywords: E-portfolios, instrument development, student perspectives, factor analysis, organizational uses)

In the past several years, e-portfolios have moved to the forefront of teacher preparation programs across the United States. There are several possible explanations for the widespread adoption. One explanation is the widespread acceptance of constructivism, whereby preservice teachers learn to use tools for learning and are guided by self-discovery (Meeus, Questier, & Derks, 2006; Strudler & Wetzel, 2005a). A second explanation is the ease of accessibility and use of information and communication technology (Meeus, Questier, & Derks, 2006). As noted by Salzman, Denner, and Harris (2002), 89% of teacher preparation programs were using portfolios as one form of assessment of their students. Thus, another possible explanation is the move from the traditional paper method to one that is digital in nature.

The organizational uses of e-portfolios that emphasize documenting preservice teacher progress in meeting curricular standards as an alternative form of assessment, is yet another explanation (Ritzhaupt, Singh, Seyferth, & Dedrick, 2008). Teacher preparation programs across the United States have implemented large-scale initiatives to connect students' digital artifacts to faculty evaluations within teacher preparation programs. These artifacts and faculty evaluations are purposefully arranged to meet state, national (e.g., NETS-T), and accrediting body standards (e.g., National Council for Accreditation of Teacher Education) (Strudler & Wetzel, 2005a). It is likely that all of these explanations have contributed to widespread adoption. Regardless, using e-portfolios in teacher preparation programs is no longer a concept but has become common practice.

Research in E-portfolios in Teacher Preparation

Strudler and Wetzel (2005a) suggest that three decisions about e-portfolio systems should be made: (a) who controls the artifacts in an e-portfolio, (b) when faculty should evaluate the artifacts, and (c) the role of reflection of student learning at various checkpoints within the teacher preparation programs. The first decision pertains to determining what artifacts should be available in an e-portfolio and whether the students, faculty, or administration make the decision. The second decision relates to when faculty should be evaluating the artifacts. In some programs, the artifacts are evaluated as part of a course, at announced checkpoints throughout an academic program, or even as an exit requirement of the program. The final decision is how and when students will reflect upon their work.

In a follow-up article, Strudler and Wetzel (2005b) raised several other important considerations, including the amount of time faculty should spend evaluating e-portfolios, the level and quality of technical support available, and the use of e-portfolios for data aggregation and program evaluation. They make the following recommendations:

- Involve several stakeholders (e.g., faculty, administration, students, etc.) in the process
- Clearly define the purpose
- Provide sufficient access and support
- Implement in increments

The recommendations provided by Strudler and Wetzel (2005b) are extremely helpful to teacher preparation programs. The focus of the recommendations is on the needs of the teacher preparation program planning to integrate e-portfolios into their programs, and to a lesser extent, on the primary users of the systems—students.

Ritzhaupt, Singh, Seyferth, and Dedrick (2008) provided a systems view of the various uses of e-portfolios from a student perspective. They outlined relevant stakeholders of e-portfolio systems in the broad context of higher education—students, faculty, administration, and employers—and connected those stakeholders to domains that are

of direct interest to students: learning, assessment, visibility, and employment. Their research mainly focused on how students perceive the organizational uses of e-portfolios. According to Ritzhaupt, Singh, Seyferth, and Dedrick (2008), the rationale for teacher preparation programs to adopt e-portfolios largely represents the need for their organizational uses (e.g., accreditation). However, e-portfolios are intended to be student-centered devices, and their integration into teacher preparation programs should directly benefit students, faculty, and other stakeholders. In effect, teacher preparation programs need to successfully integrate student-centered e-portfolios while still meeting their organizational needs. Student-centered e-portfolios should enable students to collect authentic and diverse evidence to represent what has been learned over time and what has been reflected upon, and should enable presentation to various stakeholders for defined purposes.

As noted by Wheeler (2003), the defining characteristic of a portfolio is its purpose. Strudler and Wetzel (2005a, 2005b) and Ritzhaupt, Singh, Seyferth and Dedrick, (2008) concluded that purpose is a key factor to successful e-portfolio initiatives. Both also suggest that successful integration of e-portfolios will require more time and should be acknowledged as a change process. As many stakeholders have a vested interest in e-portfolios at large, we believe the many challenges associated with successful e-portfolio integration are largely attributable to the competing purposes and uses of e-portfolios by these stakeholders. These competing purposes may create misunderstanding among the students creating the e-portfolios. Thus, we suggest examining student perspectives, as they are valuable not only in terms of evaluating the success of an initiative in reaching student-centered goals, but also in facilitating the planning and implementation of e-portfolio initiatives.

Student View of E-portfolios

An e-portfolio system involves several key stakeholders, including administration, faculty, support personnel, employers, accrediting agencies, and students. Each stakeholder has a different purpose for using an e-portfolio, and these competing purposes must be examined from the student angle. From a student's perspective, an e-portfolio includes four primary purposes: visibility, learning, employment, and assessment (Ritzhaupt, Singh, Seyferth & Dedrick, 2008). Additionally, students require both pedagogical and technical support in the creation and dissemination of their e-portfolios (Seyferth, Ritzhaupt, Singh & Dedrick, 2007). These factors are illustrated in Figure 1. The following sections briefly describe each of the factors in greater detail.

Learning

Learning—specifically, whether or not students are learning from the creation and dissemination of their work—is the chief purpose of e-portfolios. Several have suggested that e-portfolios can be used for learning purposes by a student through both reflection and revision (Acker, 2005; Hartmann & Calandra, 2007; Lorenzo & Ittelson, 2005). Reflection refers to how students should use their e-portfolios for self-assessment and to reflect on the feedback from faculty or peers as a learning experience, whereas revision refers to students improving their work as a result of reflection using the critiques received from faculty or peers. The learning factor implies that students should use e-portfolios as a way to develop and monitor their skills and knowledge as they develop over time. In essence, e-portfolios should support students' lifelong learning.

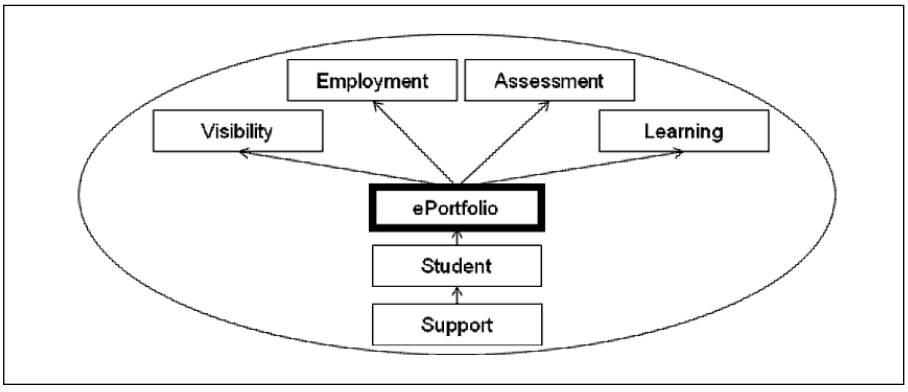

Figure 1. E-portfolio student perspective model.

Visibility

Visibility refers to how a student perceives various stakeholders observing the contents of their e-portfolios. As e-portfolios can be used to represent students' knowledge, skills and dispositions (Acker, 2005; Hartmann & Calandra, 2007; Lorenzo & Ittelson, 2005), how students perceive these various stakeholders viewing their e-portfolios is germane. For instance, a student might showcase his or her e-portfolio to friends, family, or peers. Faculty might also potentially benefit from student e-portfolios by increased communication among colleagues and having access to a showcase of students' work to highlight expectations in coursework for future students and to assist in tenure, promotion, and review (Gibson & Barrett, 2003; Siemens, 2004; Ritzhaupt & Singh, 2006). Alternatively, accrediting agencies (e.g., NCATE) might also view an e-portfolio, as administration (e.g., deans, department chairs) are concerned with e-portfolios used to document student progress in meeting curricular standards, program evaluation, and meeting accreditation requirements. Strudler and Wetzel (2005b) showed that in the several programs evaluated, all the programs indicated a clear intent of using e-portfolios for these purposes.

Assessment

The assessment component focuses on how students perceive the use of their e-portfolios as an alternative and authentic form of assessment. Several have documented the use of e-portfolios for assessment purposes (Ahn, 2004;

Mason, Pleger, & Weller, 2004) and have concluded that e-portfolios are an appropriate assessment method for higher education. E-portfolios can be used for assessment at many levels. For example, faculty can use them as an assessment tool for a specific assignment, as a culminating activity in a course, or even as a graduation requirement or capstone experience for a program of study. Important to e-portfolios for assessment is whether students perceive e-portfolios as better than or equal to traditional methods of assessment, such as multiple-choice tests or essays.

Employment

Employment is concerned with how students perceive the utility of their e-portfolios for hiring purposes. Portfolios can and have been used for employment in several disciplines, such as journalism or graphic design, for many years (Ritzhaupt & Singh, 2006). Characteristics of employment relate to whether students would choose to use their e-portfolios to aid in the hiring process, their comfort with employers requesting to view their e-portfolios, and whether students believe that their e-portfolios are a credible source for potential employers to make employment decisions concerning their abilities.

Support

A final consideration is whether students believe they are receiving sufficient support to create and maintain their e-portfolios. Support must account for both the pedagogical and technical aspects of an e-portfolio system (Seyferth, Ritzhaupt, Singh, & Dedrick, 2007). The pedagogical support refers to the educational value and rationale of the e-portfolios, and involves administration and faculty meaningfully integrating e-portfolios into the curriculum. Technical support refers to the technological assistance provided to students in using an e-portfolio system, which can be accommodated by support staff providing the technical expertise. Technology support is primarily concerned with the feasibility, usability, and sustainability of an e-portfolio system and might involve training sessions for users and immediate support.

E-portfolio System Context

The e-portfolio integration initiative described here was conducted in a school of education at a public university in the southeastern United States. The teacher preparation program has been using e-portfolio since the 2002–2003 school year. Preservice teachers are required to create their e-portfolio over the course of 15 weeks, during their field experiences. However, the use of e-portfolio system is encouraged program wide and has been integrated into several courses throughout a preservice teacher's program of study.

Upon the start of this e-portfolio initiative, the threefold purpose of the e-portfolio system was clearly defined: (a) to foster students' reflection, learning and development; (b) to provide faculty with a means to support and monitor student learning towards standards; and (c) to help the teacher preparation program to meet accreditation requirements (specifically, NCATE).

Preservice teachers are required to create their work samples and showcase their work during their internships. Preservice teachers are advised to follow a standard format for their e-portfolios by using Taskstream Learning Achievement Tools (LAT), which is "designed to facilitate the creation, collection, and assessment of learner artifacts supporting individual and programmatic achievement…" (Taskstream, 2009). The e-portfolio is also intended to be a valuable medium for showcasing competencies, skills, and dispositions to potential employers. The e-portfolio, upon completion, should provide evidence of preservice teacher competencies with respect to the newly designed North Carolina teaching standards. In particular, preservice teachers have the opportunity to use their e-portfolios to demonstrate competencies in areas such as lesson plan writing, developing survey template and assessment tools, addressing needs of diverse learners, and several more. The intention of these activities is for preservice teachers to focus on learning, professional development, and growth.

The e-portfolio artifacts include a description of the setting, which includes class, school, community, and other relevant demographic information. The artifacts generally include a unit of study or lesson plan with corresponding state and national standards. The programs had mixed approaches in terms of students' flexibility to select the types of artifacts. Although some programs dictated the evidences to be included for each standard, other programs showed let the student teachers decide in consultation with their supervisor. Preservice teachers may include unit goals, lesson outcomes, and long-range goals in the cognitive, affective, and/or psychomotor domains. In addition, they should indicate the condition, behavior, and criteria by which performance will be measured. Preservice teachers are also encouraged to answer reflective questions, such as "What did you learn about teaching, learning, and yourself?" Using TaskStream, the preservice teachers communicate with their university supervisor about their e-portfolio artifacts and receive timely feedback.

Purpose of Research

Prior to the integration of e-portfolio systems to serve the needs of academic programs, faculty and administrators should have a lucid understanding of the student perspective (Ritzhaupt, Singh, Seyferth & Dedrick, 2008; Siemens, 2005). Yet the research literature still lacks a valid and reliable measurement system to collect this vital information. In the present study, we expand and validate the Electronic Portfolio Student Perspective Instrument (EPSPI) under a different e-portfolio integration initiative, with the key purpose of gathering information on student perspectives of e-portfolios. This article examines the overall factorial validity and reliability of the EPSPI and provides practical recommendations for future research.

Method

Instrument

This research employed an instrument named the Electronic Portfolio Student Perspective Instrument (EPSPI) to measure student perspectives about e-portfolios. The instrument has been used in several studies and has been

initially validated to measure three factors: visibility, assessment, and learning with high degrees of internal consistency reliability (Ritzhaupt & Singh, 2006; Ritzhaupt, Singh, Seyferth, & Dedrick, 2008; Singh & Ritzhaupt, 2006). In this research, the instrument's items were exactly the same as those used in previous studies; however, the authors added a new set of items related to support to the instrument based on previous research suggesting that student support was a key factor in successful e-portfolio integration (Ritzhaupt, Singh, Seyferth, & Dedrick, 2008). The revised instrument contains 43 unique items and is presented in a modified Likert scale (strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree) with a not applicable response option.

Participants

Student participants (N = 224) within a school of education completed the EPSPI in their final semester. Eighty-five percent of the participants were female, which is a typical distribution for a school or college of education. Sixty-three percent of the participants were completing their degrees in elementary education, 11% in middle grades education, 6% in special education, 4% in early childhood education, and the remaining in other related degree programs. Of the ethnicity, 80% of the participants were classified as Caucasian/White and the remaining in other ethnicity classifications (e.g., African-American/Black). Seventy-five percent of the participants had been using TaskStream for more than a year. The age range of the participants was 21–54 years, with an average of 26.79 years (SD =7.82).

Procedure

The researchers made the instrument accessible in a Web-based format using SelectSurvey. To encourage participation, student participants could optionally provide their name and e-mail addresses to be entered in a raffle to win one of five $20 gift cards to a popular restaurant. The researchers made arrangements to send a hyperlink to the instrument in an e-mail encouraging student participants to respond to the survey. The researchers collected data during the fall 2008 and the spring 2009 semesters. During the fall administration, 98 students were completing their internships and e-portfolios, and during the spring, 179 students were. Sixty-eight students responded to the survey in the fall, and 156 responded in the spring, for a response rate of 69%, and 87%, respectively (81% total). These response rates are high for an online survey, as prior research suggests that average online response rates fall somewhere within the range of 24–39% (Cook, Heath, & Thompson, 2000; Sheehan, 2001).

In each semester, the survey was available for a three-week period, and during this time, the researchers sent three e-mails informing student participants that the purpose of the research was to: (a) monitor the progress of the e-portfolio initiative and (b) aid in the development integration of e-portfolios in teacher preparation programs. Participants were also informed that the survey was optionally anonymous (they did not have to provide names/e-mails), that participation was voluntary, and that the information would not be divulged in any way.

Results

Analyses of the data included descriptive analysis, internal consistency reliability analysis, and exploratory factor analyses (EFA). EFA was conducted to explore the underlying structure of the data. All quantitative analyses were conducted using SPSS version 16. An alpha level of 0.05 was used for all statistical tests.

Exploratory Factor Analysis

To examine the underlying structure of the data from the 43-item instrument, the researchers conducted EFA. Bartlett's test of sphericity for these data had a chi-square of 8700.88 ($p < .01$), which suggested the intercorrelation matrix contained adequate common variance. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.935, which was above the 0.5 recommended limit (Kaiser, 1974). The participant-to-item ratio was approximately 5:1, which is below the 10:1 ratio for factor analysis suggested by Kerlinger (1974) and above the thresholds described as more than adequate by some researchers in maintaining factor stability (Arrindell & Van der Ende, 1985; Guadagnoli & Velicer, 1988). Thus, these data appeared to be well suited for factor analysis. All EFA models were executed using principal axis factoring and an oblique (promax) rotation, as the factors were anticipated to be related.

The initial unconstrained model resulted in seven factors explaining approximately 74% of the variability based on a Kaiser's criterion and a review of the Scree plot. Similar to previous analyses (Ritzhaupt, Singh, Seyferth, & Dedrick, 2008) using the EPSPI, the factor loadings did not exhibit a truly simple structure and the negatively stated items loaded under the same factor. Thus, the negatively stated items were removed *(e.g., Item 21: I am concerned that assessment of my e-portfolio would be too subjective and too open to errors in judgment)* and another factor model was run with the remaining 39 items. The revised model resulted in five factors explaining 72% of the variability. The revised unconstrained model, however, lacked a simple structure and meaningful interpretability across the factors and item loadings. To simplify the interpretability of the results, an additional model was run, limiting the number of factors to four.

The resulting four-factor model explained approximately 69% of the variability. Though there was a slight decrease in the explained variability from the initial unconstrained model (drop of 5%), the current model is parsimonious and the items meaningfully load on the derived factors. To further explain the underlying structure, the maximum factor loadings for each item (greater than 0.35) were used to assign each item to a factor. Three items loaded on two factors using this criterion (Item 24, Item 31, and Item 32) and thus were logically assigned to a factor based on content. Analogous to the initial validation study (Ritzhaupt, Singh, Seyferth, & Dedrick, 2008), both the employment and visibility items loaded onto one factor along with two assessment items (Items 11 and 12) relating to accrediting bodies viewing student e-portfolios. The

Table 1. Eigenvalues, Variance, Cumulative Variance by Factor and Labels.

Measurement	Factor 1	Factor 2	Factor 3	Factor 4
Factor Label	Learning	Support	Assessment	Visibility
Eigenvalues	19.13	3.95	2.21	1.71
Variance (%)	49.05	10.12	5.67	4.39
Cumulative Variance (%)	49.05	59.17	64.84	69.23

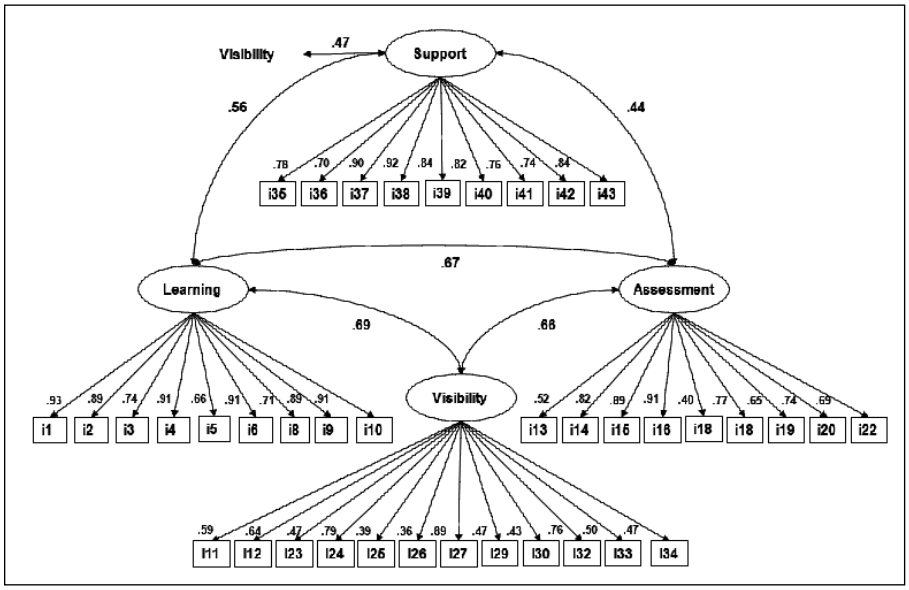

Figure 2

factor structure provides further evidence to support the claim that students perceive any stakeholder viewing their e-portfolios similarly. Table 1 illustrates eigenvalues, variation by factor, and assigned labels.

The learning factor explains the most variability at 49.05% ,followed by the support factor explaining 10.12%, and the assessment and visibility factors explaining 5.67% and 4.39%, respectively. The internal consistency reliability for the four-factor model demonstrates a strong internal structure: α = .91 for learning, α = .95 for assessment, α = .95 for support, and α = .92 for visibility; all factors are far above the social science standard of α = .7 (Nunnally, 1978). The factor model is shown in Figure 2 with the correlations among the four factors and the items' standardized regression coefficients.

Descriptive Statistics

The response distributions for the 43-item instrument did not exhibit any severe departures from normality with skewness for all items within the range of +/-1.15 and kurtosis for all items within the range of +/-3.5.

Learning factor. More than half of the students agreed (strongly agreed or agreed) that their e-portfolios helped them develop their skills (52%) and helped them monitor their skill development over time (63%). These descriptive statistics for the learning factor are presented in Table 2 (p. 116). Sixty-six percent of the students also agreed that viewing their peers' e-portfolios is a valuable learning experience. More than half of the students also agreed that they use their e-portfolios to guide their knowledge (53%) and skill (58%) development. Forty-seven percent of the students agreed they would continue to enhance their e-portfolios for lifelong learning.

Assessment factor. Students had favorable accounts of their e-portfolios in terms of assessment, as the subscale mean of M = 3.79 (SD = 0.82) was highest among all factors (see Table 3, p. 117). Approximately 75% of the students agreed an e-portfolio is a better way for faculty to assess their knowledge than a multiple choice test, and 68% agreed their e-portfolio is a better way for faculty to assess their knowledge than an essay test. Eighty-three percent of the students agreed that they perceived faculty comments about their e-portfolios as constructive criticism. Notably, 63% of the students agreed that they were comfortable with an e-portfolio used as a graduation requirement for their program of study, and 67% agreed that they would be comfortable if an e-portfolio is used as part of a capstone course (i.e., an internship or field experience).

Visibility factor. In examining how students perceive various stakeholders viewing their e-portfolios, the majority of the students agreed they are comfortable with an accreditation agency examining faculty evaluations of their e-portfolio (73%) and are also comfortable with their teachers showing their e-portfolio to potential employers (70%). The descriptive statistics for the visibility factor are shown in Table 4 (p. 118). Approximately 65% of the students agreed that they are comfortable with their teachers showing their e-portfolio to other teachers. Whereas approximately 75% of the students agreed that they would be comfortable if an employer requested to see their e-portfolios to aid in the hiring process, only 56% agreed that they would use their e-portfolios as electronic résumés to show potential employers.

Support factor. A final consideration was the newly added dimension: support (see Table 5, p. 119). Nearly two thirds of the students (63%) indicated they received appropriate training to use the e-portfolio system. Also, more than half of the students agreed that they always felt like they had support to complete their e-portfolios (57%) and that they always knew who to contact when they needed help with their e-portfolios (55%). Approximately 59% also agreed that the expectations and requirements about the e-portfolios were communicated clearly.

Table 2. Descriptive Statistics for Learning Factor

	M	SD	% in categories				
Learning Factor	3.41	0.87	SD	D	N	A	SA
1. I would use an e-portfolio to help me develop my skills (e.g., word processing).	3.38	1.06	4.91	16.96	26.34	38.84	12.95
2. I would use an e-portfolio as a way to monitor my skills as they develop over time.	3.56	1.02	3.57	14.29	19.20	48.21	14.73
3. I would use an e-portfolio to help me develop my knowledge (e.g., European History).	3.12	1.10	7.14	23.66	29.91	29.02	10.27
4. I would use an e-portfolio as a way to monitor my knowledge as it develops over time.	3.53	1.01	4.02	13.39	20.54	49.55	12.50
5. I think viewing my peers' e-portfolios would be a valuable learning experience.	3.75	0.97	2.23	8.93	22.77	44.20	21.88
6. I would use an e-portfolio to guide my skill development.	3.51	0.96	3.13	12.50	25.89	47.32	11.16
8. I use my e-portfolio to learn from my mistakes.	3.35	1.00	5.36	12.50	33.48	39.29	9.38
9. I plan to continue to enhance my e-portfolio for lifelong learning.	3.12	1.08	8.93	16.52	37.50	27.68	9.38
10. I would use an e-portfolio to guide my knowledge development.	3.42	1.02	5.36	12.05	29.46	41.96	11.16

Discussion

Results of this research must be viewed in light of its limitations. The primary limitation of this study is the sample size (N = 224). Though the response rate for the online survey was high (81%)—far above the 24–39% averages in prior research (Cook, Heath, & Thompson, 2000; Sheehan, 2001)—the small sample size influences the stability of the factor structures. The ideal participant-to-item ratio is 10:1 (Kerlinger, 1974), and the current study has a 5:1 ratio. Although this is not ideal, prior research suggests that factor stability can be maintained at lower levels (Arrindell & Van der Ende, 1985; Guadagnoli & Velicer, 1988). Also, this study was limited to preservice teachers during the 2008–2009 academic year in one southeastern public university. The findings may not generalize to different populations or different time periods.

In light of these limitations, this research has resulted in several important findings. The purpose of this research was to demonstrate the factorial validity and reliability of the EPSPI. The results provide compelling evidence that the EPSPI maintains a reproducible and reliable factor structure under different contexts. The EPSPI had been initially validated (Ritzhaupt, Singh, Seyferth, & Dedrick, 2008) to include three factors: visibility, learning, and assessment. In the present study, the results demonstrated nearly the same structure even though items for a new factor (support) were added to the EPSPI based on recommendations of previous research (Seyferth, Ritzhaupt, Singh, & Dedrick, 2007). This provides further evidence that student perspectives about e-portfolios are multidimensional.

The results revealed a highly internally consistent (Cronbach's $\alpha > .9$) four-factor structure, including the initial three factors (visibility, learning, and assessment) and the newly added factor, support. As in the first study, the visibility factor encompassed any items relating to various stakeholders viewing their e-portfolios, providing further substantiation that students perceive any stakeholder viewing their e-portfolios similarly. The learning factor accounted for approximately 49% of the 69% explained variability in the model, which substantiates learning as the principal purpose of an e-portfolio from a student perspective.

The descriptive statistics show the factor averages for the learning, assessment, support, and visibility domain were 3.41(SD = 0.87), 3.79 (SD = 0.82), 3.54 (SD = 0.87), and 3.68 (SD = 0.76), respectively. Unlike the initial validation study (Ritzhaupt, Singh, Seyferth, & Dedrick, 2008); all the subscales are above the central point (> 3.0). This finding has two important implications. First, it suggests that students may have perceived this particular e-portfolio initiative as successful, which is favorable contextual information to those monitoring and creating their own e-portfolio initiatives. Second, it suggests that the factor structure of the EPSPI is similar under a completely different context (factor averages were all below central point in the initial study at a different institution), which attests to the generalizability of the instrument's design. Notably, one of the key differences between this initiative and the prior one is that students in this initiative were afforded control over the content in their e-portfolios, as opposed to faculty and administration dictating the content. This key difference is surely a consideration for future research on e-portfolio integration.

Table 3. Descriptive Statistics for Assessment Factor

	M	SD	% in categories				
Assessment Factor	3.79	0.82	S.D.	D	N	A	SA
13. I feel that an e-portfolio is a better way for faculty to assess my knowledge than a multiple-choice test.	4.00	0.92	2.68	3.13	15.63	45.09	29.46
14. I feel comfortable if an e-portfolio is used as part of a capstone course in my program of study (e.g., it is required that you develop an e-portfolio for your internship).	3.71	0.99	4.46	7.14	16.96	50.89	16.52
15. I would be comfortable with an e-portfolio used as an assessment tool by faculty for an assignment in a course.	3.71	1.01	4.91	7.14	15.63	51.34	16.96
16. I feel comfortable with an e-portfolio used as an assessment tool by faculty for part of my grade in a course.	3.67	1.06	6.25	7.59	14.73	50.45	16.96
17. I use the faculty comments about my e-portfolio as constructive criticism.	4.13	0.73	1.34	0.45	10.71	55.36	28.13
18. I would be comfortable with an e-portfolio used as a graduation requirement to my program of study (e.g., it is required that you develop an e-portfolio to complete your program of study).	3.63	1.07	5.80	8.04	19.64	44.64	17.86
19. I feel that an e-portfolio is a better way for faculty to assess my knowledge than an essay test.	3.84	0.99	3.57	5.36	18.75	43.75	24.55
20. I am comfortable with an e-portfolio used as an assessment tool by faculty in other courses.	3.67	0.95	3.57	6.70	22.77	47.77	15.18
22. I feel that an e-portfolio is a good way for faculty to assess my knowledge.	3.72	0.98	4.02	7.14	17.86	49.55	17.41

Unfortunately, the demographic information collected is not diverse enough to draw meaningful statistical inferences among groups. This is primarily due to the characteristics of the sample (primarily females in elementary education). Further, the context of the e-portfolio initiative limits the generalizability to other colleges and programs. Further empirical observation with a cross-institutional population, followed by a confirmatory factor analysis, will shed light on whether the four-domain model is an accurate measurement system. Future research will also need to collect other related measurement to demonstrate the construct validity of the factors. The authors plan to release the instrument on a new population in the upcoming year. The uniting variable will be that the students, in some capacity, have created e-portfolios in their program. In closing, the authors believe that faculty and administration should carefully monitor the progress of their e-portfolio initiatives using a reliable measurements system. The EPSPI may currently be the only instrument that has been designed and validated to serve in this capacity.

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Table 4. Descriptive Statistics for Visibility Factor

	M	SD	% in categories				
Visibility Factor	3.68	0.76	S.D.	D	N	A	SA
11. I am comfortable with an accrediting agency looking at my e-portfolio 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).	3.78	0.99	4.02	6.70	15.63	50.00	19.64
12. I would feel comfortable with an accreditation agency examining faculty evaluations of my e-portfolio work.	3.77	0.98	4.46	6.70	12.50	55.36	16.96
23. I would be comfortable with faculty evaluations of my work posted to my e-portfolio as long as only I could view them.	3.90	0.80	1.79	1.79	18.75	53.57	18.30
24. I would feel comfortable with my teachers showing my e-portfolio to other teachers.	3.68	0.95	2.68	9.82	16.52	50.89	14.29
25. I would use an e-portfolio to showcase my work to my family.	3.53	1.12	6.25	11.61	19.64	39.73	16.96
26. I would use an e-portfolio to showcase my work to my friends.	3.42	1.14	7.14	12.50	23.21	36.16	15.18
27. I would feel comfortable with my teachers showing my e-portfolio to potential employers.	3.82	0.89	2.68	4.91	16.52	52.68	17.41
29. I would use an e-portfolio as a snapshot of my knowledge and skills to show potential employers.	3.68	1.05	3.57	10.27	18.75	41.52	20.09
30. I think my e-portfolio would be beneficial to me getting a job.	3.56	1.07	3.13	14.29	21.88	36.61	18.30
32. I would feel comfortable if an employer requested to see my e-portfolio to aid in the hiring process.	3.97	0.81	1.34	3.13	15.18	52.23	22.32
33. I would use an e-portfolio as an electronic résumé to show potential employers.	3.52	1.07	4.46	13.39	20.09	41.52	14.73
34. If I were an employer, I would use an applicant's e-portfolio, if available, to aid in the hiring process.	3.49	1.10	6.25	10.71	23.21	38.39	15.63

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Table 5. Descriptive Statistics for Support Factor

	M	SD		% in categories			
Support Factor	3.54	0.87	S.D.	D	N	A	SA
35. My faculty members were knowledgeable about the e-portfolio system.	3.58	1.02	2.68	14.29	17.86	43.75	15.18
36. My faculty members made the development of my e-portfolio a valuable learning experience.	3.48	1.05	3.57	14.29	24.11	37.50	14.29
37. When I had technical problems with my e-portfolio, my faculty members were able to assist me.	3.36	1.01	4.02	12.05	36.61	28.13	12.95
38. The staff was helpful when I encountered e-portfolio technical problems.	3.40	0.95	3.13	9.82	38.84	29.91	12.05
39. My faculty members were supportive of using e-portfolios for learning.	3.68	0.96	3.13	6.70	23.66	43.75	16.52
40. I always feel like I had support to complete my e-portfolio.	3.60	1.01	3.57	9.38	24.11	40.18	16.52
41. Expectations and requirements about the e-portfolio were communicated clearly.	3.60	1.11	6.25	8.93	19.64	40.63	18.30
42. I was provided with appropriate training to use the e-portfolio system.	3.66	1.05	5.36	7.59	17.86	45.54	17.41
43. I always knew who to contact when I needed help with my e-portfolio.	3.49	1.11	6.25	11.61	20.98	39.73	15.18

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