Exploring Faculty Perceptions of ePortfolio Use and Its Relationship to Faculty Teaching Beliefs

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As part of the National Coalition for Electronic Portfolio Research, the Center for Teaching, Learning and Technology at Washington State University is participating in collective efforts to further national research on the impact of ePortfolios in higher education teaching and learning. The idea of incorporating the use of ePortfolios into the instruction and learning process aligns with inter/national efforts to help higher education innovate by using instructional technology. Recently, numerous researchers and educational practitioners have focused their attention on the use of ePortfolios, recognizing its use as an effective tool to document and reflect teaching and learning growth. The value of ePortfolios for higher education has recently been recognized, but their use is not yet prevalent in higher education. Faculty often use ePortfolios for traditional or administrative purposes rather than taking a learner-centered approach. This may be due to their limited knowledge about ePortfolios.

Whether the potential impact of ePortfolios is maximized through innovative use depends on faculty's perceptions and values about their implementation. It is important to inspire faculty to use ePortfolios in innovative ways by identifying faculty teaching beliefs, since these beliefs may underlie their perceptions about the use of ePortfolios.

The primary purpose of this study is two-fold. The first is to understand and identify faculty perceptions and values of the use of electronic portfolio. The second is to explore how faculty teaching beliefs relate to their perceptions/values/ attitudes about ePortfolio use. Findings will help us provide faculty with appropriate support in theimplementation of ePortfolios by understanding the perception, values, and attitudes of faculty that vary according to their teaching beliefs. In addition, our work will support institutional goals of improving the richness of the undergraduate experience, as well as fostering an assessment culture than engages students with generative, authentic learning opportunities.

Method

Participants

A total of 153 faculty members participated in this study. They were contacted by emails and asked to complete an online survey. 101 faculty members completed online survey questionnaire and 52 faculty members answered a Liket-type of online survey. The participation was voluntary and their responses were confidential. Response rate was 30.6 % (153 out of 500). The sample was comprised of 57.5% male faculty and 41.2% female faculty. Assistant professors comprised 43.6%, associate professors 24.8%, and full professors 31.6%.

Measures

Faculty perceptions and values of the use of ePortfolio
An open-ended questionnaire was administered to identify faculty perceptions and values of ePortfolio use. Issues investigated included the potential impact of the use of ePortfolio on student learning and faculty teaching, the challenges and need for support system that faculty identify regarding the use of ePortfolio. Below is the open-ended questions used.

a. How do you see electronic portfolios helping your students learn?
b. How do you see electronic portfolios helping you teach?
c. If you decide to use electronic portfolios as a teaching tool, what challenges/or struggles do you think you might experience?
d. What intervention/training/support system do you need to use electronic portfolios?

An effort was made to quantify faculty responses to open-ended questions in order to explore the relationship with faculty teaching beliefs. We showed a list of faculty's open-ended responses to faculty and asked them to rate the extent to which they agreed with the listed responses. Below are the questions asked:

a. To what extent do you see the following as potential impacts of using electronic portfolios on **student learning**?
b. To what extent do you see the following as potential impacts of using electronic portfolios on **your teaching**?
c. To what extent do you see the following as **challenges** in using electronic portfolios?
d. To what extent would you need the following **support systems** to better use electronic portfolios?

Faculty Teaching Belief Survey

A survey was administered to measure the teaching beliefs of faculty. A Faculty Teaching Questionnaire was developed and validated by WSU research team to assess teacher-centered, learner-centered, and learning-centered beliefs. The questionnaire is comprised of three subscales, teacher-centered beliefs, learner-centered beliefs, and learning-centered beliefs. As for the construct validity of the measure, a factor analysis was performed using the principal axis-factoring extraction method. As predicted, a three-factor structure was found. Factor loadings are displayed in Table 1.

Table 1. Factor Analysis Results of Faculty Teaching Beliefs

	Learner-centered	Teacher-centered	Learning-centered
I encourage students to constantly check their own understanding while they are studying.	.631		
When evaluating students, it is important to consider multiple examples of student work.	.619		
It is important to help students reflect upon their thinking and learning processes.	.618		
Effective teachers consider students' prior knowledge or experience.	.577		
I provide opportunities for students to discuss their development of understanding of concepts.	.554		
My role is to provide opportunities for students to discover key concepts.	.542		
I use difficult problems to prompt student debate.	.433		
I use thematic units to organize my teaching.	.368		
Instruction should be flexible to accommodate students' individual needs.	.357		
Giving lectures is important because they model subject matter expertise.		.723	
I focus primarily on information students will need to pass the exams.		.701	
Tests should have clear and correct answers.		.691	
I base student grades primarily on quizzes and tests.		.690	
I use a textbook to plan my course.		.519	
It is important to present basic knowledge to students.		.502	
Teachers should know the answers to any questions that students ask.		.493	
Many of my assignments require students to work in groups to arrive at correct answers and solutions.			.894
I grade students' team work skills.			.680
My course activities usually require students to work individually.		.337	-.641
I encourage students to work together to solve authentic problems that students help identify.			.614
I provide opportunities for my students to critique each others' work.			.558
It is important to collaborate with students in planning the course.			.494
I value students' self assessment about learning.			.420

Results

1. *Faculty perceptions and values of the use of ePortfolio*

1) How do you see electronic portfolios **helping your students learn**?

Table 2 shows the variety of responses of faculty to the open-ended question regarding their perceived impact or values of using ePortfolios for student learning. Some faculty believed that ePortfolios help students collect and showcase their learning while some faculty view the value of ePortfolios as helping students review, assess, and reflect their learning progress. More specifically some faculty recognized the value that ePortfolios encourage students to be self-regulated learners by being more responsible for their own learning, identifying students' strengths and weaknesses, setting their own personal goals, monitoring their learning growth, and using metacognitive skills. Furthermore, some faculty stressed social aspect of learning enhanced by using ePortfolios because ePortfolios allow students to work together, consider broader audience, build community, and improve relationship between faculty and students. There was also faculty who do not see the value of using ePortfolios for student learning at all.

Table 2. Faculty Responses on the Potential Impact of ePortfolio Use on Student Learning

Potential Impact on Student Leaning	
Collecting a student's work	Student responsibility for their own learning
Organizing learning	Building community
Showcasing academic learning	Encouraging students to use metacognitive skills
Integrating university coursework	Increasing use of multimedia
Integrating course projects as a coherent whole	Improving relationship between faculty and students
Integrating academic and non-academic work	Allowing students work together
Communication between students and instructor	Providing model for future students
A more convenient, more accessible way of using paper-based portfolios	Identifying students' strengths and weaknesses
A greater variety of learning exhibits	Lifelong learning
Useful for review	Showcase for careers
Student self assessment	Helping students consider broader audience
Increasing student reflection	Peer assessment
Tracking learning growth	Don't see the value
Setting personal goals	

2) How do you see electronic portfolios **helping you teach**?

Table 3 shows the variety of responses of faculty to the open-ended question regarding their perceived impact or values of using ePortfolios for their own teaching practices. Faculty' perceived values of using ePortfolios as a teaching tool include that ePortfolios help faculty assess their own teaching practices, revise course planning, learn about student experience and learning progress, and increase opportunities to collaborate with other faculty. Some faculty

reported that the use of ePortfolios allow them to expand time and place in teaching by sharing knowledge across semesters and making it available for an audience outside the classroom. Some faculty pointed out negative aspects of using ePortfolios as a teaching tool and mentioned that ePortfolios make teaching more time-consuming and course planning more complex. There was also faculty members who reported not seeing any value of using ePortfolios as a teaching tool.

Table 3. Faculty Responses on Potential Impact of ePortfolio Use on Faculty Teaching

Potential Impact on Faculty Teaching	
Self assessment of teaching	Understanding students' learning progress
Revising course design	Making assessment easier
Revising assignment design	Useful for review
Group work evaluation	Sharing knowledge across semesters
Providing information on program assessment	Continuous assessment
Lifelong learning	Helping me create tasks encouraging student reflection
Curriculum planning with other faculty	Creating environment where students assess each others' work
Learning about student experience	Available for an audience outside the classroom
Giving student feedback	Making teaching more time-consuming
Clarifying course goals	Including more student input in course planning
Enhancing my understanding of student learning	Teaching with diverse examples
Collaborative reflection	Making course planning more complex
Communication tools between faculty and student	Don't see the value
Easy access to documents used throughout my program	

3) If you decide to use an electronic portfolios as a teaching tool, what **challenges/or struggles** do you think you might experience?

Table 3 shows the variety of responses of faculty to the open-ended question regarding their perceived challenges of ePortfolio use. Time and technology emerged as the most common challenging issues in relation to the use of ePortfolios. Another challenging issue involves student issues such as student resistance, cheating problems, student fear of sharing work, and designing and providing appropriate guidelines for students. Lack of faculty motivation and support system is also a big part of challenging issues regarding the use of ePortfolios because some faculty reported that they can not see a clear and compelling pedagogical rationale for using ePortfolios and that they need more examples of ePortfolios.

Table 4. Faculty Responses on Potential Challenges of ePortfolio Use

Perceived Challenges	
Time to learn new system	Lack of a clear pedagogical rationale for using ePortfolios
Time for use	Sustainability of the ePortfolio system
Technology issues	Need more examples of ePortfolios
Learning how to use	How to integrate ePortfolios into the course objectives
Student resistance	Providing clear instruction on how it will be used
Student fear of sharing work	Providing meaningful feedback to large numbers of students
Control of public viewing	How to evaluate ePortfolios
Lack of department support	Designing appropriate guidelines for students
How to encourage student to reflect	Increased time for students
Student cheating	Adapting to a new teaching methodology

4) What **intervention/training/support system** do you need to use electronic portfolios?

Table 3 shows the variety of responses of faculty to the open-ended question regarding their perceived need for support system. Training on the technical aspect, the pedagogical values, and information on how to implement ePortfolio were recognized as a necessary support system. In addition, support subsystem needs to be constant, readily available, and discipline-specific.

Table 5. Faculty responses on the support system that faculty may need in using ePortfolios

Support System	
Ongoing training on the technical aspect	Training on the value
Training on how to teach with ePortfolios	Knowing how students perceive ePortfolios
Viewing good examples of ePortfolios	Readily available technical support
Easy-to-use ePortfolio tool	Workshops in my discipline

2. *Relationship between Faculty Teaching Beliefs and Their Perceptions and values of ePortfolio Use*

1) Relationship between faculty teaching beliefs and perceived values/impact of ePortfolio on **student learning**

Correlation analysis results indicate that faculty possess a range of perceptions and values on the use of ePortfolios, depending on their teaching beliefs. Teacher-centered beliefs are not significantly correlated with perceived impacts, whereas learner-centered beliefs are positively correlated with faculty perceptions of the impact of ePortfolio on student learning (tracking learning growth and increasing use of multimedia). Learning-centered beliefs were positively correlated with faculty perceptions of ePortfolio use (building community). This finding suggests

that faculty who hold teacher-centered beliefs do not see the potential values of using ePortfolios for student learning. On the other hand, those who hold learner-centered beliefs anticipate that ePortfolio will help students track their learning growth as well as increase the use of multimedia. Learning-centered faculty perceive that ePortfolios help build learning communities for students.

Table 6. Correlation between faculty teaching beliefs and the perceived potential impacts of ePortfolio use on student learning

Impact on Student Learning	Teacher-centered	Learner-centered	Learning-centered
Tracking learning growth	-.23	.31*	.21
Building community	.06	.03	.31*
Increasing use of multimedia	.04	.32*	.21

2) Relationship between faculty teaching beliefs and the perceived values/impact of ePortfolios on **faculty teaching**

Faculty who hold learner-centered beliefs are more likely to see the value of using ePortflios because they believe that ePortfolios help them share knowledge across the semester. Teacher-centered faculty believe that the use of ePortfolios simplifies course planning.

Table 6. Correlation between faculty teaching beliefs and the perceived potential impacts of ePortfolio use on faculty teaching

Impact on Faculty Teaching	Teacher-centered	Learner-centered	Learning-centered
Sharing knowledge across semester	-.13	.32*	.28
Making course planning more complex	-.30*	.20	.20

3) Relationship between faculty teaching beliefs and perceived challenges

Table 7 shows the relationship between faculty teaching beliefs and perceived challenges that they may face in using ePortfolios. Interestingly, faculty teaching beliefs did not affect perceived challenges regarding ePortfolio use. This indicates that faculty may encounter ePortfolio-related challenges regardless of their teaching beliefs.

Table 7. Correlation between faculty teaching beliefs and the perceived potential challenges of ePortfolio use

Perceived Challenges	Teacher-centered	Learner-centered	Learning-centered
Perceived challenges	ns	ns	ns

4) Relationship between faculty teaching beliefs and the need for support systems

Results indicate that teacher-centered faculty have strong need for support in order for them to value using ePortfolios.

Table 8. Correlation between faculty teaching beliefs and the need for support systems

Need for Support System	Teacher-centered	Learner-centered	Learning-centered
Support system "Training on the value"	.35*	-.05	-.14

5) Relationship between faculty teaching beliefs and ePortfolio familiarity

Learning-centered beliefs were positively correlated with faculty familiar with ePortfolios, whereas teacher centered beliefs were negatively related with ePortfolio familiarity.

Table 9. Correlation between faculty teaching beliefs and ePortfolio familiarity

Familiarity	Teacher-centered	Learner-centered	Learning-centered
ePortfolio familiarity	-.30**	.16	.37*

6) Relationship between ePortfolio familiality and perceptions of ePortfolio use

Faculty with more knowledge of and familiarity with ePortfolios saw more value in using ePortfolios and perceived a lesser degree of challenges.

Table 9. Correlation between faculty familiarity with ePortfolios and their perceptions of ePortfolios

	ePortfolio Familiarity
Impact on Student Learning	.32*
Impact on Faculty Teaching	.35*
Perceived Challenges	-.41**

7) Faculty Perception Differences by Demographic Variables
   i. Not significant difference by rank
   ii. Not significant difference by teaching experience
   iii. There was a significant gender difference in perceived challenges: Male faculty < Female faculty

Implications and Conclusion

1. Faculty held a wide range of perception of the value of ePortfolio use (e.g., self-evaluation, course revision, and learning opportunities)
2. Faculty perceptions of the value of ePortfolio use were significantly related to their teaching beliefs.
3. Faculty who hold learner-centered or learning-centered beliefs tend to see more positive values of the use of ePortfolio.
4. Faculty who saw the value of ePortfolios as learning and teaching tools were not always motivated to use them, especially when they perceived barriers and costs associated with use