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Leveling the Playing Field

Using Development Research to Create an ePortfolio Implementation Framework for Educators

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Abstract

Using a development research approach, this project investigated the perspectives of faculty and administrators regarding their experiences of a university-wide electronic portfolio implementation initiative. Participants were fifty-two faculty and administrators at a large research university in the United States who were either continued users or abandoners of electronic portfolios. Survey and interview data were used to understand the electronic portfolio implementation process, including enablers and barriers to adoption of this instructional technology. Study findings and Diffusion of Innovation (DOI) theory informed the building of a six-component implementation framework which was then reviewed by three external systemic change experts for refinement. The resulting framework can be used by educational institutions to support the successful adoption and integration of electronic portfolios.

Keywords: development research; diffusion of innovation; electronic portfolios; implementation framework; systemic change

Leveling the Playing Field

Using Development Research to Create an ePortfolio Implementation Framework for Educators

The use of electronic portfolios (ePortfolios) to support learning, assessment, and professional development in higher education across disciplines has increased in recent years. ePortfolios offer a unique way to capture a variety of learning evidence from students over time, in multiple formats and across varied contexts, while also gaining student personal reflections on individual learning and growth (Chen & Light, 2010). Additionally, ePortfolios enable instructor insight into student mastery of knowledge, as well as fluency with technology (Chen & Light, 2010). As an instructional technology, ePortfolios offer customized approaches to learning and assessment through the integration of technologies that provide more choices for students and educators; thus, enabling change in higher education contexts.

Those who are instrumental to successful ePortfolio adoption and implementation, higher education faculty, are not often invited in as active participants in an open innovation process (C. E. Watson, personal communication, January 19, 2012). Further, while student perspectives of ePortfolio adoption are well represented in the literature, faculty perspectives are not (Ruiz, Quadri, & Karides, 2009; Wang & Turner, 2007). The purpose of this research study was to investigate faculty (and, to a lesser extent, administrator) perspectives regarding the university-wide implementation of an ePortfolio initiative in order to develop a framework for implementation that integrates the voice of faculty as well as systemic change theory. Three research questions supported this work:

- What strategies and resources are used by a large research university to assist faculty with ePortfolio implementation? And, to what extent do these strategies/resources reflect Diffusion of Innovation (DOI) theory?

- How do faculty perceive the current ePortfolio adoption support process? What about the process is successful?; is lacking and requires improvement?; reflects DOI theory?
- What features of DOI theory should be included in an ePortfolio adoption framework?

The resulting framework, as a support for instructional technology innovation management across an organization, informs higher education policy, administration, and process. In addition, the framework transforms ePortfolio implementation into a more accessible and feasible endeavor for faculty interested in ePortfolio adoption and use but at a loss for how to enact, as well as, sustain this innovation.

Conceptual Framework

This study was informed by two major conceptual areas: the evolution and use of portfolios, and specifically ePortfolios, as a means for learning, assessment, and professional development and the adoption and implementation of an innovation such as ePortfolios through the lens of DOI theory.

The Evolution and Use of Portfolios

The use of portfolios to demonstrate mastery of knowledge and skills is not new to education. Writers, artists, builders, and more have used portfolios to collect, document, and share growing bodies of work as they developed in knowledge and skill. To be sure, portfolio use spans content areas and dates back centuries (Adams, 2010). As portfolios have shifted to electronic formats, a renewed interest in their adoption and implementation has led to new opportunities for learning, assessment, and professional development.

Assessment is central to the ongoing dialogue regarding educational reform and will

continue to gain importance (Baker, 2001). As a vital measure and driver of learning and performance improvement, assessments must continue to evolve to better gage individual learner progress in complex and multifaceted ways. While traditional assessments such as exams are often considered efficient to administer and easy to grade, these types of assessments typically focus on the acquisition of foundational knowledge and are unable to assess higher-level knowledge and skills (Linn, 1993). However, performance assessments, such as those included in a portfolio of work, require observable disciplinary activity and artifacts (Linn, 1993) and enable a learner to demonstrate new knowledge and skills with depth and sophistication (Airasian, 1996).

Watson, Zaldivar, and Summers (2010) claim that electronic portfolios assist with assessment of students on three distinct levels. First, the creation process for building ePortfolios provides a method for capturing student learning that is often unable to be captured using traditional assessment, allowing instructors to see the growth of students through a course or program. Second, if the instructor of a course or program builds their own ePortfolio alongside students, that instructor will be able to better reflect on the progress and experiences of their students. Lastly, programs and institutions also benefit from the use of ePortfolios, providing rich learning and program assessment data that can be used for curricular improvements.

Over the last decade, the versatility, portability, and efficiency of ePortfolios have brought prominence to this instructional technology in higher education across disciplines. While this trend may originate in the need to assess students and student work in diverse ways, ePortfolios have also proven useful for examining and supporting individual learning and professional development over time (Mitchelson & Mandell, 2004; Watson & Doolittle, 2011).

ePortfolio Adoption and Diffusion of Innovation Theory

As higher education institutions are increasing their use of instructional technologies to support teaching and learning, ePortfolios meet a growing institutional need for relevant technology-enabled resources (Bass & Eynon, 2009; Schneider, 2009). However, barriers to their adoption, integration, and sustainment arise (Surry, 2002). Similar to any other innovation, ePortfolios are subject to the conditions and stages of the innovation diffusion process. Applying what is known about technology adoption and diffusion to the introduction of ePortfolios into an institutional system can support successful use (Surry, 2002) while still honoring the unique perspectives and contexts of local faculty users.

Diffusion of innovation theory (DOI), which seeks to understand the social process that community members engage in to adopt or reject an innovation (Rogers, 2003; Surry & Farquhar, 1997), was relied on as the broad conceptual framework for guiding all aspects of the study's design including instrument development, data collection and analysis, framework development, and framework review and revision. Specifically, this study drew from two DOI theoretical perspectives: Rogers' five Stages of Adoption and Ely's Eight Conditions for Change.

Rogers (2003) identified five Stages of Adoption of an innovation: knowledge, persuasion, decision, implementation, and confirmation. Similarly, Ely (1976) described Eight Conditions for Change: dissatisfaction with the status quo, sufficient knowledge and skills, availability of resources, availability of time, rewards or incentives, participation, commitment, and leadership. Drawing from Rogers and Ely, Surry and Farquhar (1997) argued that the study of an instructional technology in light of DOI theory can help instructional technologists have a better understanding of the adoption or rejection of an innovation, work more effectively with clients, and even "lead to the development of a systematic model of adoption and diffusion" (p.

2). Grounded in DOI theory and his own professional experiences with innovation adoption, Surry developed the RIPPLES survey as a means for studying the adoption of an instructional technology across seven dimensions of DOI: resources, infrastructure, people, policies, learning, evaluation, and support. This study employed a modified RIPPLES survey (Blevins & Brill, 2013), along with selected follow-up interviews, to explore the perspectives of faculty and administrators experienced with the adoption of ePortfolios at a large university to inform the development of a framework for implementation.

Methodology

Study Design

This study employed a design and development research methodology, defined by Richey and Klein (2007) as the "systematic study of design, development and evaluation processes with the aim of establishing an empirical basis for the creation of instructional and non-instructional products and tools and new or enhanced models that govern their development" (p. 1). More specifically, this effort used what was previously known as Type 2 developmental research and recently renamed to model research, in which the research "pertains to the [study] of the development, validation, and use of design and development models." (Richey & Klein, 2007, p.10).

Consistent with model development research, three phases were used to develop a framework for supporting electronic portfolio implementation: analysis, development and evaluation, and revision. In the analysis phase, faculty and administrator perspectives regarding the ePortfolio implementation process were investigated through survey and interviews in light of DOI theory. In the development and evaluation phase, study findings were used to develop a six-component framework that was then evaluated by three experts in systemic change. In the

revision phase, recommendations from the experts guided the revision and finalization of the framework.

Setting and Participants

The focus of this study, a large United States research university with approximately 30,000 students, began a university-wide initiative to implement ePortfolios in 2002. Several credible strategies were considered to support the initiative's success including: strategic alignment of the initiative to department, college, and institutional goals; partnerships with key stakeholders; pilot-testing; faculty development opportunities; and the use of the Concerns-Based Adoption Model (CBAM) for change (Hord, Rutherford, Huling-Austin, & Hall, 2006) and Ely's Eight Conditions of Change (Ely, 1990) for implementation.

However, it was unknown the extent to which these elements were systematically and successfully woven throughout the initiative. Anecdotal data suggested challenges with long-term implementation, yet empirical evidence to guide improvements was not available. Thus, the perspectives of 144 members of the university community, primarily faculty who had used or were currently using electronic portfolios, were sought through survey and follow-up interviews.

Data Sources and Analysis

The survey instrument used in this study was a modified RIPPLES survey, which is based, in part, in DOI theory and specifically designed to explore instructional technology integration in higher education. The 55 question survey is divided into four sections: participant demographics; background (individual historical use of ePortfolios); ePortfolio implementation at their university; and, opinion of ePortfolio adoption and implementation. The ePortfolios at the university section, which was modified to more directly reflect Ely's Eight Conditions for Change, contained seven subsections reflective of the RIPPLES model acronym: resources (time

and money); infrastructure; people (communication and shared decision-making); policies; learning (specific instructional outcomes for user training); evaluation; and (user) support. Each of the seven subsections contained close-ended questions as well as at least one open-ended question. The close-ended question in these sections had a possible value between one and six (1 = don't know/unsure; 2 = strongly disagree; 3 = disagree; 4 = neutral; 5 = agree; 6 = strongly agree).

Fifty-two out of 144 individuals (36%) responded to the survey. A descriptive analysis of the data was conducted first in order to determine the means, percentages, and standard deviations for each survey item. Second, participants' answers to the open-ended questions were examined for emerging themes (Creswell, 2009). Based upon the study's purpose, the survey findings influenced the development of the final interview protocol in order to provide opportunities for more directed data collection.

The ten question interview protocol, finalized in light of survey findings, probed each participant to speak in greater depth about their experiences implementing ePortfolios at the university. A small interview sample of 12 survey participants was selected to represent a diverse cross-section of the university. Selection criteria included: discipline, gender, years at the university, years teaching, role (faculty or administrator), time using ePortfolios, and current usage status (continued user or abandoner). Interview transcripts were coded for themes. Interview findings were then triangulated with participant survey findings in order to strengthen the analytic process (Creswell, 2009).

Using the findings from the survey, interviews, and DOI literature review, a framework for supporting the adoption of ePortfolios by university faculty, staff, and administrators was developed. Conceptually, the framework was meant to operationalize those aspects of DOI

theory that appeared to be most supportive of successful ePortfolio adoption. Five experts in DOI theory were asked to provide feedback, via a rubric, regarding the extent to which the framework effectively and appropriately integrated important DOI elements. Three reviewers completed the review process. This feedback was analyzed and incorporated into a revised ePortfolio adoption framework.

Findings

Participant Demographics

Fifty-two out of 144 individuals responded to the survey (36%) and all of them indicated that they were currently or had previously used Sakai, the university's ePortfolio system. Sixty-two percent (32) of the participants who submitted the survey were female and 38% (20) were male. In response to age, 4% (2) indicated they were age 20-29; 10% (5), age 30-39; 27% (14); age 40-49; 38% (20); age 60-69; and 4% (2); age 70 or above. Thus, 14% of respondents could be considered early career, while 69% could be characterized as mid to late career.

Regarding professional position, 14% (7) responded professor; 29% (15) responded associate professor; 8% (4) responded adjunct instructional faculty; and 24% (12) responded administrator. Twenty-two percent (11) responded to the Other category as follows: administrative/professional faculty (2), advanced instructor (2), instructor (2), assistant professor (1), clinical assistant professor (1), adjunct instructional faculty (1), graduate assistant (1), and assessment coordinator (1). Thus, in total, 67% (34) of survey respondents were faculty and 29% (15) were in administrative roles. Although only participants who were faculty or administrators were to be included in this study, it was decided to include the graduate assistant participant's data since that individual indicated serving a pivotal role in the implementation of ePortfolios in the program.

Background

When asked the number of years teaching at the college or university level, 52 of the 52 participants (100%) responded. Of those responses, 35% (18) answered zero to 10 years; 40% (21) answered 11 to 25 years; and 25% (13) answered 25 years or more.

When asked how long participants had been using or previously used ePortfolios, 48 of 52 participants (92%) responded. Of those responses, 23% (11) answered less than one year; 35% (17) answered one to three years; and 42% (20) answered four or more years. Surprisingly, 42% of respondents reported abandoning use of ePortfolios. When asked why they stopped using them, 22 of 52 participants (42%) responded. Responses were grouped into the following six categories, ordered here from high to low: change in employment position (8); usability and reliability of technology (8); faculty or student resistance (3); too much time or effort required (3); change in course structure (3); and, still in development (1). Of note here are the two categories of technology reliability and time investment in that these themes also arose in other sections of the data.

Regarding the purpose(s) for using ePortfolios, 50 of 52 participants (96%) responded. Of those responses, 46% (23) answered to track learning; 60% (30) answered to assess learning; 40% (20) answered to support professional development; and 36% (18) answered Other. From the Other category, the following response themes emerged: course or program requirement (3); scholarship and employment (4); support student learning (5); showcase student work (3); accreditation (1); and document learning (1). Thus, most respondents rely in assessment as the main reason for using ePortfolios.

When prompted to identify what they liked most about using ePortfolios, 50 of 52 participants (98%) responded. Ordered high to low, these categories included: housing and

showcasing of artifacts (27); self-reflection and learning process engagement (15); meets accreditation and assessment requirements (7); reveals whole picture of student (6); flexibility (4); and, availability and security (1). Thus, most survey respondents value ePortfolios as a means to store and access student work.

When asked to pinpoint what they liked least about using ePortfolios, 51 of 52 participants (98%) responded. Responses were grouped in categories, high to low, as: lack of user-friendly interface and non-intuitiveness of platform (25); time spent planning and grading (11); student and faculty difficulty and resistance (9); inflexibility of tool (8); defining and understanding ePortfolios (2); and, inaccessibility after graduation (2). Given these responses, it appears as if survey respondents are most troubled by the limitations of the current ePortfolio platform, Sakai.

Regarding what participants perceived as the most important factor(s) influencing faculty adoption and use of ePortfolios, 49 of 52 participants (94%) responded. Responses were categorized as follows: usability and flexibility of system (20); faculty buy in and clear purpose (19); support and training (7); reward for use and time commitment (6); and, the learning curve (5).

ePortfolios at the University

To investigate more closely how participants viewed the seven DOI factors previously identified in the RIPPLES model, they were asked to rate the importance of each of these factors in regards to ePortfolio implementation at their university as well as ePortfolio, as a representative instructional technology, for adoption and implementation in general. Regarding the importance of each individual RIPPLES item to implementation, participants rated Infrastructure of greatest importance (94% agree or strong agree); Resources (time and money)

of second greatest importance (92%); and Learning (specific instructional outcomes of user training) of third greatest importance (87%). The rest of the items fell in line as follows: user Support (85%), Policies (60%), Evaluation (66%), and People (communication and shared decision-making) (52%).

Given that Infrastructure was rated of greatest importance, it is not surprising that participants chose to comment on infrastructure issues the most, on both the survey and during the interviews. Survey data revealed that, while the overall university infrastructure is viewed positively, the ePortfolio technologies are not. In fact, the ePortfolio technology system's design was identified by survey participants as the top barrier to ePortfolio use. As Professor Johnson (administrator) put it during his interview: "You cannot have a successful portfolio program if you have a product that is full of holes and bugs." Interestingly, when asked on the survey what they felt was the greatest potential enabler to ePortfolio use, participants identified the technology's capabilities as second only to support.

While 92% of survey respondents ranked the Resources of time and money as second most important to ePortfolio implementation, they distinguished time as more important than money to successful use. In fact, they identified a lack of time to learn about and implement ePortfolios as the second most significant barrier to use. In his interview, Professor Lewis (Associate Professor) commented: "You have to have time to be able to think through the process. There has to be time dedicated to the instruction of the technology itself and the support of that technology." Professor Young shared: "If you put a lot of technology into your class, you get a pat on the head…Nobody's saying to me, 'Oh here, let me give you fewer classes or something to make up for the time you are spending.'"

In regards to RIPPLES, user Learning (87%) and user Support (85%) were rated as third

and fourth most important respectively to ePortfolio implementation. At the university, one central office was dedicated to providing both training and support to ePortfolio adopters across the campus. This type of centralized support was viewed as both essential and exemplary by survey respondents. Comments included: “The university office responsible for administering ePortfolio support is excellent. They are always very helpful.” (Lecturer); “ The eP office group is great. They have been extraordinarily helpful.” (Instructional Faculty); and “The eP office is a lifesaver. Without those folks and their support, I would not have included ePortfolios.” (Instructional Faculty). In contrast, elements of support at the program, department, and university levels, particularly in regards to leadership, were also viewed as essential but inconsistent and disjointed. In his interview, Professor Adams (Instructor) addressed this need for a more unified culture of support: “We all need to be aligned in the goals of the ePortfolio…there’s a lot of moving parts, and a lot of people need to be on board for it to work.”

The ePortfolio Implementation Framework

Based on the findings from survey and interview data, as well as a review of the DOI literature, a framework for implementing ePortfolios was created. This original framework was reviewed by three external DOI experts. Their feedback was then analyzed and incorporated into a revised framework. Generally, the reviewers agreed that the framework had strong alignment with DOI theory. They also agreed that the framework would prove useful for its intended audience. Reflective comments include: “For institutions new to ePortfolio, this framework will provide much needed guidance and systematic recommendations for moving an adoption campaign forward” (Reviewer 1); “The framework provides a guidance process for implementing and sustaining ePortfolio in higher education” (Reviewer 2); “Great potential and practical use in the field” (Reviewer 3). Reviewers also agreed that the purpose of the framework

and use of the rating scale could be clarified; concerns addressed through the addition and revision of some of the framework's column headings and descriptive text. This section describes the revised framework in detail. Any study data included here in this section are intended to help tell the story of the framework build and are not intended to represent a comprehensive reporting of study findings.

The framework developed is meant to support those implementing, or attempting to implement, ePortfolios in a higher education context by guiding them through key attributes of systemic innovation in a practical and applied manner. First, six essential components were identified and defined through both the DOI literature, specifically Rogers (2003) and Ely (1976), and study findings. The framework was then assembled to include these six components in a modular format: awareness, motivation, commitment, resources, leadership, and evaluation (see Figure 1).

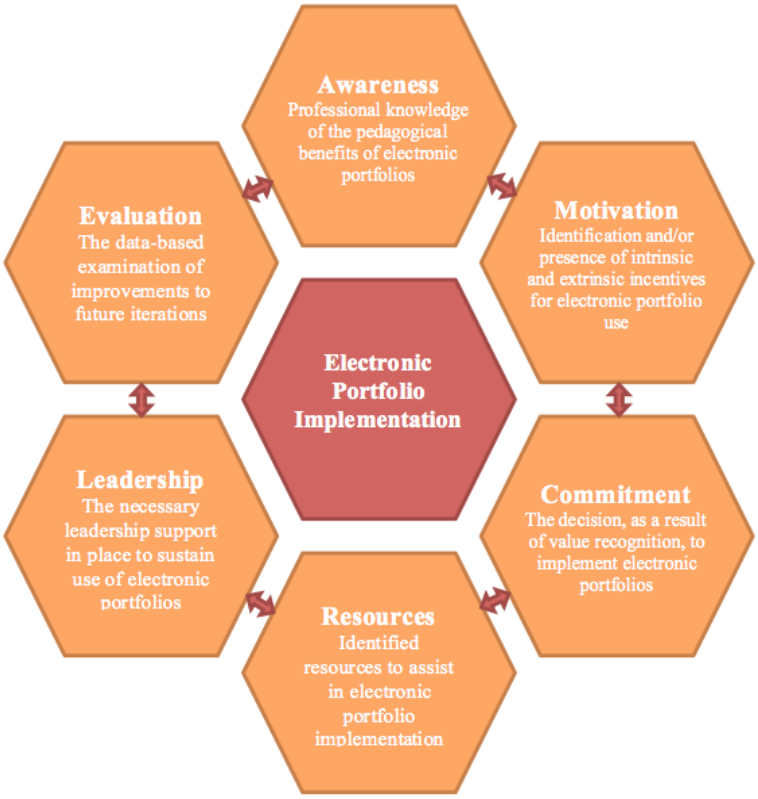

Figure 1. ePortfolio Implementation Framework Components

Awareness is defined as the professional knowledge of the pedagogical benefits of ePortfolios. The Awareness component reflects Rogers' (2003) knowledge stage in his Stages of Adoption model and Ely's (1976) dissatisfaction with the status quo and sufficient knowledge and skills conditions in his Conditions for Change model. Study findings demonstrate that participants had developed a strong awareness of the usefulness of ePortfolios, especially to capture and show student work and as a means for assessment and, through the centralized ePortfolio office, adopters had excellent opportunities to knowledge and skill-build. Furthermore, Professor Adams (Instructor) reflected how a dissatisfaction with the old status quo and an awareness of how ePortfolios could help resolve this dissatisfaction informed his adoption process:

Prior to [ePortfolios], we were doing [artifact creation and collection] in different areas.

> We had a piece here, a piece here, and we were trying to teach the [students] a methodology of developing themselves, but in addition to that, "how can I prepare myself for finding a job".

The Motivation component of the framework is defined as the identification and/or presence of intrinsic and extrinsic incentives for using ePortfolios. The Motivation component reflects Rogers' (2003) persuasion stage in his Stages of Adoption and Ely's (1976) dissatisfaction with the status quo and need for rewards/incentives conditions in his Conditions for Change model. Study findings demonstrated that although participants recognized the intrinsic value of ePortfolios, they also recognized the significant time investment necessary to implement and that such an investment should be acknowledged and even mitigated or compensated. A remark by Professor Johnson (Administrator) pinpoints a recognized intrinsic value to ePortfolios, the move from unwieldy paper-based to more manageable electronic means for storage and access:

> Because again, you've got a portfolio [this] thick for every student in the department and, you know we were graduating at that point 20 to 25 students a year. Twenty or 25 students a year was three quarters of a drawer and after 10 years we had … a lot of records and so … we were very eager to see the ePortfolio and we participated in that from the very beginning.

Commitment, the third component in the framework, is defined as the decision, as a result of value recognition, to implement ePortfolios. The commitment component reflects Rogers' (2003) decision stage in his Stages of Adoption and Ely's (1976) participation and commitment conditions in his Conditions for Change. The need for consistent commitment across program, department, and university levels was evident in study findings. As Associate

Professor Lewis, remarked, "We all need to be aligned in the goals of the ePortfolio… there's a lot of moving parts, and a lot of people need to be on board for it to work."

The next component, Resources, is defined as identified resources to assist in ePortfolio implementation. This component reflects Rogers' (2003) implementation stage in his Stages of Adoption and Ely's (1976) sufficient knowledge and skills, availability of time, and availability of resources conditions in his Conditions for Change. Study findings supported the importance of adequate resources and resource allocation, including adequate time and support, for successful ePortfolio implementation. As Professor Clark (Administrator) commented,

> We ran into a whole lot of resource issues, no one had the time to work on it even though we had leadership buy-in. Resources were not provided to back it up even though I think they were interested in it. They felt overwhelmed all the time.

Leadership is defined as the necessary leadership support in place to sustain use of ePortfolios. This component reflects Ely's (1976) leadership condition in his Conditions for Change. Study findings supported the idea that ongoing involvement and support from leadership at all levels is important to sustaining ePortfolio implementation. As Professor Johnson (Administrator) remarked,

> I think the answer to that is you need to make sure that the faculty are aware of the opportunity and how easy it to use right from the beginning. I do not see much information coming across my desk anymore that says, "Hey we have this cool tool, why don't you try it?"

The final component, Evaluation, is defined as the data-based examination of ePortfolio use for improvements to future iterations. This framework component reflects Roger's (2003) stages of implementation and confirmation. Further, it is also reflective of the need for systemic

evaluation of the ePortfolio initiative, as documented in study findings. As one survey respondent, an administrator, remarked,

> I think evaluation is very important. Evaluation results need to be communicated and added upon in order for them to be enablers. I think if evaluations are done in a solitary way and not acted upon, I am not sure how helpful they are.

After the six essential components were identified and arranged, more work was done to expand the framework into a usable tool (see Appendix A). The intention was to enable anyone considering implementing ePortfolios, or already in the process of implementation, to use it to assess the workgroup's current status in the implementation process, as well as critical next steps. In addition to providing a definition of each component, guidance in the following areas was provided for each component: Selected Strategies to Support Component; Key Stakeholder Involvement; Assessment of Current Implementation Status; and, Next Steps for Implementation Efforts. The "Selected Strategies to Support Component" column provides a non-comprehensive list of strategies to enact each component. The "Key Stakeholder Involvement" column provides key stakeholders that can influence the progress on that component. A rating scale is also provided for users in the "Assessment of Current Implementation Status" column to assess where a workgroup is in regards to each component and identify next steps to focus on in the implementation process. For example, a rating of one would identify a component as a major priority in planning efforts, whereas a three would indicate the component is of low priority. Through such a quick check, action planning provided in the "Next Steps for Implementation Efforts" column could then be based on top priorities, perhaps minimizing time required toward adoption and implementation efforts.

Conclusion

A university-wide implementation of ePortfolios is a large, complex process requiring the long-term and thoughtful coordination of infrastructure, resources, and people. This study offers insight into faculty and administrator perspectives regarding the process as well as a framework for enhancing it. An organization choosing to use the framework to guide implementation can benefit in a number of ways. The framework opens up the innovation process, making it transparent to all stakeholders, thus guiding open communication and decision-making across the organization. Rather than feeling isolated and guessing at next steps, educators remain connected to the initiative and are better prepared to call on the most important innovation adoption support elements at critical and appropriate times. By working within an open implementation process, educators are less distracted by unexpected innovation stumbling blocks and better able to focus on ePortfolios as a vital means for student learning, assessment, and professional development.

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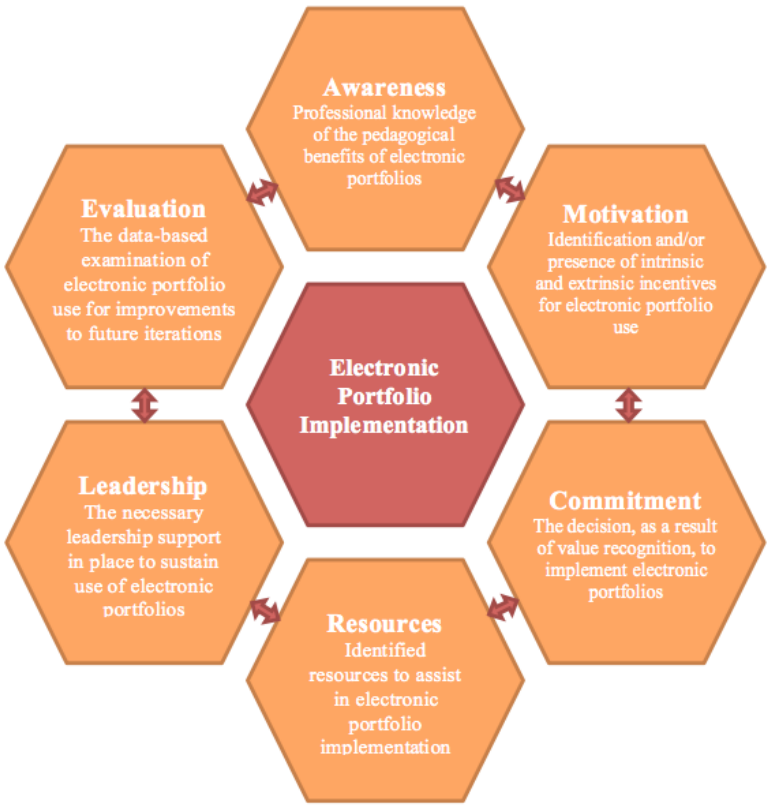
Appendix A

A Framework to Support Electronic Portfolio Implementation in Higher Education Contexts

Introduction to the Framework

Based on survey data and interviews conducted with faculty and administrators who have implemented electronic portfolios (ePortfolios) at a large research university in the United States and improved upon by suggestions from three expert reviewers, the following framework for implementing ePortfolios was created. The framework is meant to support those implementing, or attempting to implement, ePortfolios in a higher education context by guiding them through key attributes of systemic innovation in a practical and applied manner.



The framework is divided into six components that are vital to the successful implementation of ePortfolios by faculty over time. These components (Awareness, Motivation,

Commitment, Resources, Leadership, and Evaluation) reflect important diffusion of innovation elements put forth by Everett M. Rogers and Donald P. Ely, prominent scholars in systemic change. Awareness is defined as professional knowledge of the pedagogical benefits of ePortfolios and corresponds with Roger's element of knowledge as well as Ely's condition of dissatisfaction with the status quo. Motivation is defined as the identification and/or presence of intrinsic and/or extrinsic incentives for using ePortfolios and corresponds with Roger's element of persuasion as well as Ely's conditions of dissatisfaction with the status quo and rewards or incentives. Commitment is defined as the decision, as a result of value recognition, to implement ePortfolios and corresponds with Roger's element of decision as well as Ely's conditions of participation and commitment. Resources is defined as identified resources to assist in ePortfolio implementation and corresponds with Roger's element of implementation as well as Ely's conditions of sufficient knowledge and skills, availability of time, and availability of resources. Leadership is defined as the necessary leadership supports in place to sustain use of ePortfolios and corresponds with Roger's element of implementation as well as Ely's conditions of leadership. Evaluation is defined as the data-based examination of ePortfolio use to inform improvements to future iterations and corresponds with Roger's element of confirmation.

The framework was built with the intention to enable anyone in any context considering implementing portfolios or already in the process of implementation to use it to assess the workgroup's current status in the implementation process, as well as critical next steps. The framework is intended as modular, meaning that the components can be considered in any order as needed. In addition to defining each component, a non-comprehensive list of strategies to enact each component, as well as key stakeholders that can influence the progress on that component are provided. In column four of each framework component, you may notice a scale

for rating the current implementation status of the component. This scale is provided for users to assess where the workgroup is in regards to each component and identify next steps to focus on in the implementation process. The intent of the 3-point rating scale is for the workgroup (e.g. organization, department, or program level) to take the pulse of the group's current implementation status. For example, a rating of one would identify a component as a major priority in planning efforts, whereas a three would indicate the component is of low priority. Through such a quick check, action planning can then be based in top priorities.

Component	Selected Strategies to Support Component	Key Stakeholder Involvement	Rating of Current Implementation Status	Next Steps for Implementation Efforts
Awareness Professional knowledge of the pedagogical benefits of electronic portfolios	• Websites • Newsletters • Articles • Presentations • Professional development	• Identified high-level opinion leaders including but not limited to: ○ Academic leaders on campus (e.g. provost, teaching and learning directors) ○ Leading electronic portfolio scholars and practitioners ○ Local faculty innovators	1. Faculty are unaware of the pedagogical value of electronic portfolios. 2. Faculty are somewhat aware of the pedagogical value of electronic portfolios. 3. Faculty are very aware of the pedagogical value of electronic portfolios.	Rating of 1 or 2 • Identify multiple avenues for electronic portfolio awareness building. • Plan a 3-6 month awareness building campaign. • Reassess awareness status after one to two academic years. Rating of 3 • Reassess awareness status at next formal, systemic evaluation of electronic portfolio implementation. (A systemic evaluation is recommended every three to five years.)

Component	Selected Strategies to Support Component	Key Stakeholder Involvement	Rating of Current Implementation Status	Next Steps for Implementation Efforts

Motivation
 	
Identification and/or presence of intrinsic and extrinsic incentives for electronic portfolio use
	• Learner incentives
	  ○ Hands-on, applied projects
	  ○ Alternative assessment opportunities
	  ○ Showcases and/or competitions
	  ○ Job seeking resource
	• Faculty incentives
	  ○ Departmental awards
	  ○ Accreditation fulfillment
	  ○ Teaching release time for development
	  ○ Grants and monetary incentives
	• Communication channels (awareness campaign, professional development sessions)
		• Provost and/or academic unit decision makers
		• Electronic portfolio advocates
		• Faculty innovators
		• Student innovators
			1. Faculty are unaware of the intrinsic and extrinsic incentives for using electronic portfolios.
			2. Faculty are somewhat aware of the intrinsic and extrinsic incentives for using electronic portfolios.
			3. Faculty are very aware of the intrinsic and extrinsic incentives for using electronic portfolios.
				Rating of 1 or 2
				• Identify appropriate and realistic complement of learner and faculty incentives.
				• Use communication channels to convey incentives.
				• Showcase examples of student electronic portfolios that are relatable and convey incentives.
				• Reassess motivation status after one to two academic years.
				
				Rating of 3
				• Reassess motivation status at next formal, systemic evaluation of electronic portfolio implementation. (A systemic evaluation is recommended every three to five years.)

Component	Selected Strategies to Support Component	Key Stakeholder Involvement	Rating of Current Implementation Status	Next Steps for Implementation Efforts

Commitment
 	
The decision, as a result of value recognition, to implement electronic portfolios
	• Faculty acknowledgements and rewards for initial investments of time and effort
	• Exemplar electronic portfolios as models
	• Dedicated ePortfolio staff/office
	• Inclusion in strategic plan
		• Provost and/or academic unit decision makers
		• Electronic portfolio professional staff
		• Faculty leadership team
			1. Faculty are not committed to the use of electronic portfolios.
			2. Faculty are somewhat committed to the use of electronic portfolios.
			3. Faculty are very committed to the use of electronic portfolios.
				Rating of 1 or 2
				• Identify a faculty leader by department or program, to establish and direct a regular schedule of work meetings regarding electronic portfolio implementation.
				• Reward faculty for initial time and effort.
				• After defining the direction of the initiative, involve technology service providers and ePortfolio staff in conversation with the faculty team to ensure potential:
				  ○ technology solutions are feasible.
				  ○ ePortfolio platforms are feasible and will support the features of desired models.
				• Reassess commitment status after one to two academic years.
				
				Rating of 3
				• Reassess commitment status at next formal, systemic evaluation of electronic portfolio implementation. (A systemic evaluation is recommended every three to five years.)

Component	Selected Strategies to Support Component	Key Stakeholder Involvement	Rating of Current Implementation Status	Next Steps for Implementation Efforts
 Identified resources to assist in electronic portfolio implementation	• Targeted in-house professional development activities • Dedicated Technology support • Dedicated Pedagogy support • Professional ePortfolio organizations (AAEEBL, ePIC, EPAC) and associated resources	• In-house professional development service providers (ePortfolio, technologies, pedagogy) • Faculty innovators • Graduate assistants • External electronic portfolio professional organizations, conferences, and/or journals	1. Faculty are unaware of the resources available to assist in their implementation of electronic portfolios. 2. Faculty are somewhat aware of the resources available to assist in their implementation of electronic portfolios. 3. Faculty are very aware of the resources available to assist in their implementation of electronic portfolios.	Rating of 1 or 2 • Use communication channels (awareness campaign, professional development sessions) to convey available resources. • Ensure that available resources (including incentives) are accessible to faculty in light of work habits and environments. • Check for other reasons for non-use of resources. • Reassess resources status after one to two academic years. Rating of 3 • Reassess resources status at next formal, systemic evaluation of electronic portfolio implementation. (A systemic evaluation is recommended every three to five years.)

Component	Selected Strategies to Support Component	Key Stakeholder Involvement	Rating of Current Implementation Status	Next Steps for Implementation Efforts
 The necessary leadership support in place to sustain use of electronic portfolios	• Ongoing recognition by important leaders through preferred communication channels (websites, newsletters, showcases, and presentations) • Inclusion in strategic plan and other policy documents	• Electronic portfolio professional staff • Contact staff for technology and pedagogy supports • Provost and/or academic unit decision makers • Faculty champions	1. Faculty do not have the leadership support needed to sustain their use of electronic portfolios. 2. Faculty somewhat have the leadership support needed to sustain their use of electronic portfolios. 3. Faculty have the leadership support needed to sustain their use of electronic portfolios.	Rating of 1 or 2 • Align electronic portfolio initiative with strategic plan goals. • Recognize faculty and student electronic portfolio work. • Develop new initiatives for enhancing and highlighting ongoing ePortfolio work. • Reassess leadership status after one to two academic years. Rating of 3 • Reassess leadership status at next formal, systemic evaluation of electronic portfolio implementation. (A systemic evaluation is recommended every three to five years.)

Component	Selected Strategies to Support Component	Key Stakeholder Involvement	Rating of Current Implementation Status	Next Steps for Implementation Efforts
Evaluation The data-based examination of electronic portfolio use for improvements to future iterations	• Gather student, faculty, and/or potential employer feedback through survey, interview, or other data collection options.	• Electronic portfolio professional staff • In-house evaluation resources service provider • Faculty	1. Faculty are unaware of the evaluation activities and outcomes related to the implementation of electronic portfolios. 2. Faculty are somewhat aware of the evaluation activities and outcomes related to the implementation of electronic portfolios. 3. Faculty are very aware of the evaluation activities and outcomes related to the implementation of electronic portfolios.	Rating of 1 or 2 • Electronic portfolio staff and evaluation staff plan for and implement an electronic portfolio evaluation • Use evaluation findings to improve the next phase of ePortfolio implementation • Reassess evaluation status after one to two academic years. Rating of 3 • Reassess evaluation status at next formal, systemic evaluation of electronic portfolio implementation. (A systemic evaluation is recommended every three to five years.)

Component	Current Implementation Rating	Next Steps	Key Players to Involve	Target Completion Date(s)	Additional Notes
Awareness	☐1 ☐2 ☐3				
Motivation	☐1 ☐2 ☐3				
Commitment	☐1 ☐2 ☐3				

Component	Current Implementation Rating	Next Steps	Key Players to Involve	Target Completion Date(s)	Additional Notes
Resources	☐1 ☐2 ☐3				
Leadership	☐1 ☐2 ☐3				
Evaluation	☐1 ☐2 ☐3				