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E-PORTFOLIOS, COURSE DESIGN, AND STUDENT LEARNING: A CASE STUDY OF A FACULTY LEARNING COMMUNITY

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ABSTRACT

The purpose of this case study was to investigate faculty perceptions of participating in a Faculty Learning Community (FLC) and how the FLC contributed toward their pedagogical use of e-portfolios. The researchers were also interested in faculty perceptions of the potential impact of e-portfolios on student learning. An online survey and focus group were used to collect data for this study. Results suggest that the FLC, as a professional development experience, enabled faculty at different levels of e-portfolio adoption, to learn from their peers, become more confident instructors, reflect on course design, and plan for changes in the instructional use of e-portfolios. Faculty reported that changes in instructional design through the intentional inclusion of e-portfolios can have a positive impact on student learning. Implications for practice are discussed.

Keywords: Faculty learning community, e-portfolio, faculty professional development, course design, student learning

Introduction

Faculty are hired to be content experts. As a result, a terminal degree has historically been viewed as a license to teach at colleges and universities (Lowenthal, Wray, Bates, Switzer, & Stevens, 2013). However, an increasing number of colleges and universities are now expecting faculty to be experts in teaching as well as their content area. The problem with this is that most faculty have had very little training or coursework on how to be an effective teacher (Oleson & Hora, 2014) because teaching is not often addressed in doctoral education (Greer, Cathcart, & Neale, 2016; Maynard, Labuzienski, Lind, Berglund, & Albright, 2017; Rinfrette, et al., 2015). In addition to this, faculty are also expected to integrate technology into their classrooms. While restructuring doctoral programs to focus more on teaching and technology might address this problem, another possible solution is for centers of faculty development to use faculty development workshops to develop these skills in faculty (Amin et al., 2009; Berkman, Silverstone, June Simmons, Volland, & Howe, 2016; Jiandani, Bogam, Shah, Prabhu, & Taksande, 2016). In this paper, “Centers of Faculty Development” or “faculty developers” are used as generic phrases to include all of the various types of professional development programs, and faculty and staff involved with such programs, at colleges and universities.

One of the many problems faculty developers face is that even though 60%, if not more, of a faculty member’s job is dedicated to teaching, getting promoted, and attaining tenure are still disproportionately dependent on excelling at traditional forms of scholarship (Colby, 2015; Swihart, Sundaram, Hook, DeWoody, & Kellner, 2016); faculty therefore often place less emphasis on teaching than they do on research (Brownell & Tanner, 2012; Cadez, Dimovski, & Zaman Groff, 2017; Phaneuf, Lomas, McCutcheon, John, & Douglas, 2007). This creates a culture where faculty, at many colleges and universities, have very little free time to attend faculty development opportunities focused on improving their teaching. This, in turn, causes faculty developers to focus all too often on offering short, one-off, workshops that can fit into faculty members’ busy schedules (Khan, Khan, Dasgupta, & Ahmed, 2013; Lowenthal, 2008). A problem with this approach is that short workshops often fail to make lasting changes in one’s teaching; instead, more sustained faculty development is needed for long-term changes in practice (Lee & Le, 2013; Stains, Pilarz, & Chakraverty, 2015). Therefore, while faculty developers are fully aware of the limited time and motivation many faculty have to focus on improving their teaching, an increasing number of centers have begun creating longer faculty development programs, whether that be multi day, weeklong or even semester or academic year long programs, to help faculty improve their teaching (see Khan, et al., 2013; Nadelson, Shadle, & Hettinger, 2013).

A Faculty Learning Community (FLC) is one example of this type of faculty development program. A FLC, according to Cox (2004), is a:

cross-disciplinary faculty and staff group of six to fifteen members (eight to twelve members is the recommended size) who engage in an active, collaborative, yearlong program with a curriculum about

enhancing teaching and learning and with frequent seminars and activities that provide learning, development, the scholarship of teaching, and community building. (p. 8)

FLCs can help foster a sense of shared purpose and vision (Blessinger, Cozza, & Cox, 2015; Lightner & Sipple, 2013) and thus “transform faculty from isolated subject matter experts into collaborative instructional leaders” (Blessinger et al., 2015, p. 132). This bridging of silos might be especially useful in higher education institutions that hire a large number of non-tenure track instructors to meet their teaching needs (Banasik & Dean, 2016). While FLCs are not a panacea, research suggests that even in cases where instructional practices are not substantially changed, participating in a FLC may still have a “priming effect, preparing participants for the longer-term process of conceptual change and internalization of reformed teaching practices” (Nadelson, Shadle, & Hettinger, 2013, p. 115) as well as increase job satisfaction (Wagner et al., 2015). Despite the purported benefits of FLCs, there is relatively little research on faculty perceptions of taking part in a FLC. Given this, the researchers decided to investigate faculty perceptions of taking part in a FLC.

While there are numerous ways in which faculty can enhance their teaching and students’ learning, during the past few years, there has been an increased interest in the pedagogic use of e-portfolios (Kabilan & Khan, 2012; Skiba, 2005). An older, yet still relevant definition of e-portfolios describes e-portfolios as a “digitized collection of artifacts including demonstrations, resources, and accomplishments that represent an individual, group, community, organization, or institution” (Lorenzo & Ittelson, 2005, p.2). E-portfolios have been found to support students in their reflection (Panos, 2015; Roberts, Maors, & Herrington, 2016), peer review, development of technology skills (Wakimoto & Lewis, 2014), increase subject-matter knowledge (Chang, Liang, Tseng, & Tseng, 2014), writing performance (Nicolaidou, 2013) and formative assessment (Fuller, 2017; Hooker, 2017). E-portfolios have also been used to measure learning outcomes for general education courses in higher education (Hubert, 2016).

Interest in the use of e-portfolios has been fueled by a number of factors, such as the need to engage students in active learning environments, the desire to have students create original content, and the need to authentically assess student learning (Reynolds & Shaquid Pirie, 2016) in an era of increased accountability (Clark & Eynon, 2009). The need to demonstrate greater integration in learning across disciplines and finding connections between educational, professional, and personal life experiences, has also helped increase faculty interest in e-portfolios. Perhaps, most importantly, research suggests that e-portfolios can “help students unify and make meaning out of their educational experience” (Gambino, 2014, p. 6) while also providing a structure for developing “reflection and integrative thinking” (Takayama, 2014, p. 1).

There are also administrative benefits of using e-portfolios. For instance, e-portfolios can be useful for course and program level assessments (Barbera, 2009; Gülbahar & Tinmaz, 2006; Hubert, 2016; Oehlman, Haegar, Clarkston, & Banks, 2016; Ring, Waugaman, Brackett, & Jackson, 2015). Students can use e-portfolios to collect representative examples of their work which can later be used for job applications, to create “a professional online identity” (Oehlman et al., 2016, p.13) and in turn help students transition into the workforce (Bennett, Rowley, Dunbar-Hall, Hitchcock, & Blom, 2016; Boulton, 2014). Students often find e-portfolios to be more efficient for demonstrating their skills and abilities when searching, applying and interviewing for jobs, compared to more traditional paper-based portfolios (Feather & Ricci, 2014).

However, in order to leverage the benefits of e-portfolios, faculty need to be trained and supported in how to use e-portfolios in their courses and/or programs, through effective professional development (Eynon & Gambino, 2016). Therefore, the purpose this study was to explore faculty perceptions and experiences taking part in a FLC and specifically to explore how participating in a FLC impacted faculty pedagogical use of e-portfolios and, in turn, perceptions of how this use impacted student learning. In the following paper, the results of this study and implications for research and practice are reported.

Background

FLCs are typically cohort-based or topic-based (What is a Faculty Learning Community?, n.d.). Cohort-based faculty learning communities usually last an academic year and are designed to include faculty interested in broad areas related to teaching and learning (e.g., scholarship of teaching and learning, inclusive/diverse teaching and learning environments, early career faculty); topic-based faculty learning communities, however, usually focus on a specific topic. Western State University has offered topic-based FLCs on the following topics: mobile learning, Open Educational Resources (OER), e-portfolios, and Universal Design for Learning (UDL).

Given the possible pedagogical benefits of using e-portfolios in teaching and learning, Western State University piloted an e-portfolio program in Spring 2013. After vetting available e-portfolio platforms, Digication was determined to be the most appropriate e-portfolio platform, primarily due to its ability to support program assessment as well as be a platform to showcase student learning. The University Foundations (General) Studies Program at Western State University was the first program to use Digication for program assessment as well as to

showcase student learning. All incoming freshmen taking University Foundations courses needed to demonstrate their learning using a Digication e-portfolio. Gradually, instructors from other programs like English First Year Writing, Engineering, History, Anthropology, and Art started using e-portfolios in their courses.

As the use of e-portfolios increased, instructional designers in the Instructional Design Educational Assessment (IDEA) Shop (a division of the Center for Teaching and Learning) believed that there was an opportunity to both broaden the use of e-portfolios across campus as well as improve how faculty were using e-portfolios for teaching and learning. Therefore, in Spring 2016, a topic-based FLC was created around the use of e-portfolios in the classroom. The goals of this FLC were for faculty to:

- Engage in a community with peers to share pedagogical and technical implementation experiences with e-portfolios;
- Gain knowledge of how to create a professional-level e-portfolio;
- Apply instructional design principles to redesign existing courses that incorporate e-portfolios;
- Evaluate whether or not e-portfolios are a good way to achieve course-level learning objectives; and
- Analyze ways in which e-portfolios can enable students to reflect upon their learning.

Each FLC organized by the IDEA Shop, regardless of topic, is administered in the same way. All instructors are eligible to participate—including adjunct faculty, lecturers and tenure-track faculty; but the number of spots in each FLC is limited each semester. While FLCs at Western State University are usually limited to eight participants, at the time of this study, the e-portfolio FLC was limited to a maximum of ten participants. Each semester faculty must apply to join a FLC. Two FLCs (one in Fall and one in Spring) are offered each academic year. The FLC under consideration for this study was a semester long FLC offered during the Spring 2016 semester.

When faculty apply to participate in a FLC, they are asked to describe their plans—which for this FLC included describing their current level of e-portfolio adoption, how they plan to incorporate e-portfolios into their teaching, when they plan to start using e-portfolios, in what courses, and with how many students—and their ability to attend monthly cohort meetings and hands-on sessions. Each faculty member at Western State University receives a stipend of \$300, paid as supplemental salary, to participate in a FLC. Seventeen faculty members applied to participate in the e-portfolio FLC; ten of the seventeen were selected to participate based on the quality of their applications.

During the Spring 2016 semester, participants of the e-portfolio FLC attended four (each an hour long) face-to-face cohort meetings as well as four webinars (each an hour long). The face-to-face meetings were held bi-weekly; in these meetings, faculty discussed and shared with their peers their experiences using e-portfolios in teaching and learning. Some topics discussed during these meetings included using e-portfolios for reflection, assessments, peer-review, feedback, experiential learning, and job applications.

The webinar sessions were held on alternating weeks; during these sessions, faculty met face-to-face at a campus location and watched webinars created by Digication—the e-portfolio application used at Western State University; they then discussed the topics covered in each webinar. Some of the webinar topics included training on effective uses of the Digication platform, templates, customized e-portfolios, and demonstrations of how Digication e-portfolios were used in other higher education institutions across the United States.

Two instructional design consultants (IDCs) from the IDEA Shop facilitated all cohort meetings and webinars. One of the IDCs was a researcher for this study while the other IDC was a staff member of the IDEA Shop, unconnected to this study. The IDCs facilitated discussions, showed relevant e-portfolio examples, and provided hands-on training on how to use Digication. Although specific examples using Digication were used, the goal was to discuss the general utility of e-portfolios as pedagogical tools.

Method

The purpose of this study was to investigate faculty perceptions of participating in a FLC and how it contributed toward the pedagogical use of e-portfolios. The researchers were also interested in faculty perceptions of the potential of e-portfolios to improve student learning. More specifically, this study sought to answer the following research questions:

- RQ1. What are faculty perceptions and experiences of participating in a FLC?
- RQ2. What are faculty perceptions and experiences of how participating in the FLC impacted their pedagogical use of e-portfolios?
- RQ3. What are faculty perceptions of the potential impact of e-portfolios on student learning?

The sample for this study included nine out of the ten faculty members (three lecturers, one adjunct, three assistant, one associate, and one full professor) who participated in the Spring 2016 semester FLC on e-portfolios. The disciplines represented in the FLC were – Art, Physics, Multidisciplinary Studies, English, Communications, Business Management, General Education, Kinesiology, Applied Sciences, and Nursing. While the Business Management faculty member participated in the FLC, the faculty member chose not to participate in this study.

Participants of the study were predominantly female (78%), teaching undergraduate courses with an average of 25-30 students per class (see Table 1). Six (67%) out of the nine participants of this study were already using e-portfolios in their courses, while others were at the early stages of adoption where they were simply investigating how they might use e-portfolios in their courses.

Table 1
Faculty Participants in E-portfolio FLC of Spring 2016

Gender	Discipline	Level	Current e-portfolios users
Female	Applied Sciences	Undergraduate	No
Female	Art	Undergraduate	Yes
Male	Physics	Undergraduate	No
Female	English	Undergraduate	Yes
Female	Communications	Undergraduate	Yes
Female	General Studies	Undergraduate	No
Female	Nursing	Undergraduate	Yes
Female	Kinesiology	Undergraduate	Yes
Male	Multidisciplinary Studies	Undergraduate	Yes

To answer the research questions, data was collected using two instruments: (a) an online survey, and (b) a semi-structured focus group. Nine out of the ten (90%) FLC members agreed to participate in the study. The data collected from the online survey was anonymous; the focus group data, though, due to its nature, was not anonymous. However, the researchers de-identified the responses, summarized, and reported the data anonymously. Using two different forms of data collection enabled the researchers to triangulate the data, using the “broad numeric trends from quantitative research and the detail of qualitative research” (Creswell, 2003, p.100). The survey included seven Likert-type scale questions and seven open-ended questions; it took approximately 25 minutes for the participants to complete the online survey. The focus group question protocol contained seven open-ended questions and it took 45 minutes to complete; the focus group took place in a secure campus location, it was facilitated by one of the researchers, and it was recorded using a mobile device.

The survey and focus group questions were created by a subject matter expert, and one of the researchers of this study, to align with the research questions guiding the study. Face validity of the instruments were established by two external subject matter experts not involved with the study.

The data from the online survey was exported into a spread sheet. Frequencies and descriptive statistics were calculated. Due to the sample size of this study (and in turn the lack of statistical power) as well as our overall goal to investigate a case rather than generalize findings to a larger population, inferential statistical analysis was not conducted (Nadelson, Shadle, & Hettinger, 2013). The qualitative data from the open-ended questions was put into a separate file; the data was coded using an open coding approach and grouped into themes. The focus group data was transcribed and later coded using the same approach.

Results

The results of our inquiry are described below. Results were separated by research question and then by emergent themes. Data from the focus group addressed RQ 1, RQ 2, and RQ 3, while data from the survey addressed RQ 2 and RQ 3. The data collecting instruments, research questions and emergent themes are listed in Table 2 to present an overview of the results.

Table 2
Themes Emerging from Data Related to Research Questions

Data collection instrument	Research question	Emergent themes
Focus Group	RQ1	<ul style="list-style-type: none"> • Theme One: Change in level of teaching confidence • Theme Two: Relevance of topics included in the FLC • Theme Three: Support from fellow FLC cohort members • Theme Four: Support from FLC facilitators
Focus Survey	Group, RQ2:	<ul style="list-style-type: none"> • Theme One: Transitioning to e-portfolios • Theme Two: Assessment and e-portfolios • Theme Three: Impact on course design • Theme Four: Re-thinking course goals, learning objectives, activities, and assessments. • Theme Five: Teaching and learning strategies
Survey, Group	Focus RQ3	<ul style="list-style-type: none"> • Theme One: Impact on student learning though e-portfolio enhanced course design

RQ 1. What are faculty perceptions and experiences of participating in a FLC?

Several themes addressing RQ 1 emerged from the focus group data.

Theme One: Change in level of teaching confidence after participation in the FLC. Most instructors reported an increase in teaching confidence after participating in the FLC. The FLC helped increase their teaching confidence by providing them with knowledge of tools and strategies to implement e-portfolios in their courses. Instructors who were not currently using e-portfolios also felt an increase in teaching confidence simply from knowing that the technology existed and that peers were using it. Here are some of the comments on how teaching confidence was impacted:

- “One of my colleagues already uses them [e-portfolios], and feedback from students was positive. That’s kind of what encouraged me to start but without this FLC, I would not have felt confident to implement it. This really gave me the tools to start using it in my course.”
- “I am thinking of using it at the 300 level and also increasing the value of it for students because now I feel like I am comfortable and ready to do that effectively. Without this support, I would have been intimidated even if I wanted to try it. This has been really helpful for me.”
- “I had one student at the very beginning who was bitterly complaining and she was really struggling and her e-portfolio was the best one. She had taken every piece of advice anybody had given her, gone back and reorganized everything. This gives me a whole bunch of confidence for the future. Students were learning the process and were better in the end than the beginning.”
- “It [confidence] is definitely higher. Just knowing that the technology exists, increases confidence, just knowing what’s possible is always really beneficial. Even if I don’t use some of the features, at least I know they are there. What is the range of things available, [sic] so definitely confidence is much higher.”

Theme Two: Relevance of topics included in the FLC for teaching, learning, and course design. While most faculty reported that the topics discussed at the FLC were relevant to their pedagogic goals, a few mentioned that certain topics covered during the webinars were not relevant to their current teaching. Some of the comments were:

- “If we are not there yet [sic] some of the videos don’t make sense yet. It becomes relevant but at the time you may think not.”
- “There was an overview of possibilities. In the Physics department there is a reticence [sic] oh I have to learn another thing? They are keen on using Google Sites. To them, that makes sense for whatever reason, open source or whatever. People have strong opinions. Hearing things from a Digication perspective was still very good.”
- “The topics covered were pretty relevant to me. There was one that I thought I would never use, assessments [sic]? There were bits of it that I liked, but there were others that I would never use.”
- “I was pretty familiar with Digication and already have it in the two courses I teach, so the webinars and meetings didn’t really change my course design or teaching.”

Theme Three: Impact of support from fellow FLC cohort members. In general, participants felt supported by their fellow FLC members. Faculty who were already using e-portfolios in their courses as well as faculty who were just exploring the possibility of its use, found the peer discussion, sharing of ideas, and troubleshooting at the FLC to be helpful. These were some of the perceptions reported:

- “Having the support of the cohort group was refreshing because I would come in here and hear that everybody else was going through something similar and some potential solutions that I could take back to my students. So that was reassuring.”
- “I really liked coming and seeing that we were not the only people considering using it, there was more widespread thinking about it, so it would not be just my students who are the only students. I did not get a lot of specific kinds of support but just the idea of seeing how many other people were interested in it, which was good.”
- “There were times I had a question and it would be answered by someone in the cohort as well as the facilitator. Sharing experiences of how they have done it. Sharing ideas is always helpful. Combination [sic] of peers and a facilitator was useful.”
- “My talk to other people on how they use it was also helpful. I always like that part of these learning communities. It may not make you do something totally brand new but it has given me some different perspectives and ways of thinking about things that I am already doing in my class.”

Theme Four: Impact of support from FLC facilitators. Participants reported that they valued the support they received from the facilitators of the FLC outside the FLC meetings. This support came in various forms such as email communication, providing additional digital training materials, and having long-term consultations with faculty. Some of the comments made by faculty were:

- “I got good support. My emails were answered if I had a question. You [sic] made it clear that you were there to schedule appointments, answer emails, if we needed additional support more than what we were getting in the cohort.”
- “I liked that you [sic] had thought ahead and made help videos, and you were willing to make videos for the students. It was really useful that you added yourself to my course, so that you could see what students were doing, in case there was a question. So I thought that was a little concierge approach to learning.”
- “There was lots of support from the facilitators, that part is pretty strong, not only during the semester talking with them but now I know I can get their help during the summer and after. No hesitation in reaching out for help [sic] help me help me! Now I know my resources.”

RQ 2. What are faculty perceptions and experiences of how participating in the FLC impacted their pedagogical use of e-portfolios?

Data from both the survey and the focus group helped answer RQ 2. The survey included five point Likert-scale-type questions as well as open ended ones, while the focus group had only open ended questions. Five themes emerged out of the survey and the focus group data. report Data from the survey is reported first, followed by that from the focus group.

Survey Results

The researchers wanted to know how participating in the FLC impacted faculty’s pedagogical use of e-portfolios (Table 3). A majority (89%, $M=3.50$) of faculty either agreed or strongly agreed that participation in the FLC made them more knowledgeable on how to transition from a paper portfolio to an e-portfolio. Similarly, 89% ($M=4.50$) of faculty felt their experience in the FLC made them knowledgeable on using e-portfolios for assessment, and 56% ($M=3.50$) thought that after participating in the FLC, they knew how to assess an e-portfolio. Faculty also reported that they were more knowledgeable on how to include team-based assignments (67%, $M=4.0$), meaningful activities (78%, $M=3.0$), and social learning (78%, $M=4.50$) in their course design. Overall, 56% ($M=3.0$) of faculty felt that attending the FLC led to changes in how they designed their courses which had or will likely have a positive impact on student learning.

Table 3

Perceptions of Impact of FLC Participation on Pedagogic Use of e-portfolios

Degree of agreement with statement	[Strongly Disagree-----Strongly Agree]					M	SD
	1	2	3	4	5		
More knowledgeable of transition strategies from physical to e-portfolios	0	0	1	1	0	3.50	0.70
More knowledgeable of using e-portfolios for assessment	0	0	0	1	1	4.50	0.70
More knowledgeable of assessing e-portfolios	0	0	1	1	0	3.50	0.70
More knowledgeable of designing team-based assignments using e-portfolios	0	0	1	0	1	4.0	1.41
More knowledgeable of designing meaningful activities using e-portfolios	0	0	2	0	0	3.0	0
More knowledgeable of designing social learning using e-portfolios	0	0	0	1	1	4.50	0.70
Changes in course design will positively impact student learning	0	0	2	0	0	3.0	0

The responses to the open-ended survey questions indicated the emergence of the following themes. Examples of comments under each theme are provided:

Theme One: Transitioning to e-portfolios. Some faculty worked in departments like English and Art where physical portfolios were still in use. For them, learning how to effectively transition to e-portfolios was important. Some comments about transitioning from physical to e-portfolios were:

- “I plan to continue to apply [sic] replacing sketchbooks with e-portfolios to expand the types of process work students can include in this traditional component of a studio art course. One strategy I will use more is to include incremental process assignment deadlines, to have students continuously work on their e-portfolios.”
- “Because a paper portfolio is physically cumbersome, I never asked students to include prior drafts or evidence of drafting (they only included the copies I commented on). I focused on asking students to think and build their portfolios all semester long rather than waiting until the end, thus documenting along the way.”

Theme Two: Assessment and e-portfolios. After participating in the FLC, faculty had learned ways to use e-portfolios to meet course and program level learning objectives. The following are some comments on how faculty thought e-portfolios could be used for assessment of course and program level learning objectives:

- “Bachelor of Applied Sciences (BAS) Program Learning Objectives (PLOs) will be assessed in [sic] the e-portfolios. Template will include PLOs, and artifacts from the students’ academic careers will be uploaded into the e-portfolio to demonstrate meeting PLOs.”
- “I like the fact that you can attach a grading rubric to an assignment in Digication, and also leave feedback through the Conversations tool.”

Responses were mixed, though, with regard to whether participating in the FLC helped faculty learn how to assess e-portfolios in terms of their overall design and how to use e-portfolios to provide direct feedback to learners. Some comments about knowledge of assessing e-portfolios included:

- “Good with respect to individual elements. Harder to say wrt [sic] overall design.”
- “It is helpful because I can directly place the comments about the student work in the e-portfolio. Normally I am filling out a grade sheet about a sculpture project. I have to spend a lot of time explaining what about [sic] the work I am discussing and hope they understand it. E-portfolios close that gap.”
- “I don’t know if I will use the e-portfolios to provide feedback or still use printed rubrics. I am indecisive.”

Theme Three: Positive impact on course design. After participating in the FLC, faculty reported that they learned how to design courses to effectively integrate e-portfolios. For instance, faculty learned how to use e-portfolios to design team-based assignments, include meaningful activities, and engage students in social learning through peer review. Here are some of the comments made by faculty on how they plan to enhance course design using e-portfolios:

- “I am considering creating e-portfolios for group projects. i.e., students use one portfolio for their project. I think this would be an effective way to encapsulate their group experience and its outcomes.”
- “I plan to possibly include self-reflection essays in e-portfolios in the future.”
- “Peer feedback on presentation development.”
- “I want to build on the social elements for my online course to help build community.”

Focus Group Results

The focus group results were separated by emergent themes. Under each theme, representative comments made by participants are provided.

Theme Four: Re-thinking course goals, learning objectives, activities, and assessments. After participating in the FLC, faculty perceived themselves to be more knowledgeable about the various pedagogic benefits of using e-portfolios. Consequently, they reviewed their current course design in the light of how they could include e-portfolios to help students showcase learning, engage in peer interaction, review, learn incrementally, and reflect. The following were some comments made by participants:

- “Frankly, e-portfolios can be used as a employment/career development kind of tool for physics majors. Often times for physics majors it can be a personality thing. It can be a strange degree. Slightly weird degree for some employers. We think of black holes all the time, why would I want to hire you? It has made me think a lot about the activities and assessments, specifically in the CID and FF [sic] courses that we would do, and to some degree the course goals for those two classes.”
- “For studio art courses, one challenging thing is that there is a heavy dependence on oral discussion in a group setting in a critique format, so this can operate as an alternative, if I started to enable the discussions and commenting functions. I think it could lend itself well to that.”
- “I am thinking is how might they look at what they have learned holistically, what have they learned about each other in the different kinds of majors and doing a reflective piece.”
- “I always liked the idea of portfolios and since mine is a writing course I like the idea of revision. What I have done in the past is given them chances to revise but that really gets cumbersome for me. And then I was like OK I am going to try e-portfolios cause [sic] I think I will be more effective, paper portfolios are a big mess, it is hard for me to set it up and structure for them.”

Theme Five: Teaching and learning strategies learned at the FLC. Faculty reported making a variety of gains as a result of participating in the FLC in terms of gaining a different perspective on things they were already doing in their teaching. They also learned specific pedagogical strategies like the use of reflection, group work, peer reviews, and spaced assignment submission deadlines. Some of the comments made about teaching and learning strategies learned at the FLC were:

- “Being in an FLC may not make you do something totally brand new but it has given me some different perspectives and ways of thinking about things that I am already doing in my class”
- “I learned about creating communities for an entire program, allowing for program learning objectives assessment.”
- “I learned about using e-portfolios for group projects.”
- “I learned about the Conversations tool and I am planning on implementing it as a way for students to give peer feedback on e-portfolio design.”

RQ 3. What are faculty perceptions of the potential impact of e-portfolios on student learning?

One of the goals of this study was to know faculty perceptions on how inclusion of e-portfolios in teaching would impact student learning. The summary of data from the focus group and open-ended questions from the survey revealed the emergence of a predominant theme which addressed RQ 3. Data from the survey is presented followed by that from the focus group.

Survey Results

Theme One: Impact on student learning through e-portfolio enhanced course design. Faculty in this study reported that the changes they made in the design of their courses, after completing the FLC, would bring about positive changes in student learning. They also believed that students using e-portfolios would engage more with course materials through reflection, peer review, and independent learning; as well as that students may begin to identify ways in which an e-portfolio can showcase their learning and research for job applications and presentations. Some of the faculty comments in response to open-ended questions in the survey included:

- “I did add a journal assignment to my Spring course asking students to reflect on how they might use e-portfolios outside of the course. The training on how to customize e-portfolios will definitely help students think about that issue and hopefully take the e-portfolio with them after they graduate.”
- “I hope to help students engage in my course more often, through thoughtful reflection because of e-portfolios. Sculpture is very faculty centered so usually students do not think about my course outside of

class. I hope that e-portfolios can help them be more engaged more frequently, especially in developing their concepts.”

- “I hope for students to understand the lifelong application of e-portfolios, that this is a skill that translates directly to their workplace.”

Focus Group Results

Faculty responses in the focus group indicated that e-portfolios was seen as a platform where students can showcase their research and learning to potential employers, take ownership of learning, and engage in continued learning beyond graduation. The following were some comments made by faculty:

- “One thing that seemed rewarding for them is that really it is their own space. They really took ownership of it in a nice way and I think that added to the quality and it gave me faith that perhaps it can be an effective tool for independent studies and internships and things with less contact hours, where then [sic] I can actually see the students’ progress and understand how much they have been working. Literally how often they are evidencing their work on the portfolio, rather than have just a finished product at the end of the semester and not know how much went into it.”
- “My goal is to encourage students to use their e-portfolios beyond their time at Boise State. At this point, I have added an assignment that asks students to think about how they can use their e-portfolios outside of the academic setting.”
- “I read this article about making assignments real. Writing for an audience is so different from writing for the instructor. By putting up assignments in the e-portfolio, you are putting it up for a potential employer.”
- “Students may be able to represent their physics research through e-portfolios even though it is not a publication. Maybe we will get to the point one day where instead of presenting their poster they would present their e-portfolio.”

Faculty comments seems to indicate that participating in the FLC increased their teaching confidence, knowledge of relevant pedagogic topics, engagement with peers and FLC facilitators, knowledge of using e-portfolios for better assessment, course design, and teaching.

Discussion

In this case study, the researchers set out to investigate faculty perceptions of participating in a FLC and how it contributed toward learning specific skills like the pedagogical use of e-portfolios. The researchers were also interested to know faculty perceptions on what the potential impact of e-portfolios would be on student learning.

The results of our inquiry suggest that participation in the e-portfolio FLC had a variety of perceived impacts on faculty. Most participants reported an increase in teaching confidence after participating in the FLC and planned to or were already making changes to their course design, so as to make best use of e-portfolios. This is in keeping with findings from earlier studies where faculty experienced greater empowerment, motivation, desire to innovate in teaching (Trust, 2017) and increased job satisfaction (Wagner et al., 2015) after participation in faculty learning communities. Participation in the FLC also encouraged most faculty to re-think their course goals, learning objectives, activities and assessment plans.

Faculty learned many pedagogic strategies at the FLC on how to productively include e-portfolios in their teaching and students’ learning. This is similar to earlier studies, where faculty reported experiencing greater understanding of discipline specific knowledge, desire to implement changes to curriculum and instruction (Natkin & Kolbe, 2016), as well as greater willingness to use innovative pedagogy as a result of participating in FLCs (Furco & Moely, 2012).

Similar to earlier studies, some faculty in this study reported having actually experimented with teaching methods and improved on existing course learning objectives, after participating in the FLC (Addis et al., 2013). Participants gained through discussion with peers and received timely, quality support from the FLC facilitators. Learning through peer interaction and support was also reported in earlier studies on FLCs (Lundberg, 2014), when faculty perceived to have made professional development gains, through engagement with colleagues across disciplines (Jackson, Stebleton, & Laanan, 2013). Since the FLC in this study included faculty at different points of the e-portfolio adoption scale, slightly advanced users were able to help less advanced peers by sharing their expertise with each other.

A little more than half (56%) of the faculty thought that changes in course design after their participation in the FLC, would bring about positive changes in student learning. In the past, students of faculty who have participated in FLCs, have also reported a variety of perceived learning gains, which differed across disciplines (Wicks, Craft, Mason, Gritter, & Bolding, 2015).

While, such findings regarding FLCs are not unique, this particular FLC was unique in that it accepted faculty who were in a variety of stages of e-portfolio adoption. A few were already using e-portfolios in currently taught courses, while others were merely testing waters before considering adoption. Advanced users served as role models for novice users and helped them troubleshoot technical and pedagogic aspects of implementation. Also, faculty had varying reasons for joining the FLC. Some faculty belonged to programs, which mandated use of e-portfolios for program assessment, while others were more flexible and wanted to use it for showcasing student learning, with no mandated program level goals. The FLC was designed to meet the needs of both groups of faculty.

There were some limitations of this study. First, the FLC in this study was only a semester long; this short timeframe may not be long enough to identify lasting changes. Future research needs to be conducted on FLC's that last longer than a semester. Another limitation of this study was that it only included only self-reported data and did not include any classroom observation, syllabus, course design analysis, or student interviews to corroborate participant perceptions.

Despite these limitations, some implications for practice were identified. These implications may be useful to faculty developers as well as faculty who want to know about the benefits of learning communities for teaching and learning:

- **Teaching Confidence:** FLCs can increase teaching confidence. Faculty often hear about pedagogical good practices from colleagues and other sources but lack the resources and confidence to implement them in their classrooms. Purposeful professional development in the form of FLCs can help faculty achieve this confidence.
- **Peer support:** Teaching can be isolating (Erdem, 2014; Hennick, 2015; Gunning, White, & Busque, 2016). However, FLCs can help faculty learn the power of peer support and help dissolve the silos that faculty often experience in higher educational institutions.
- **Reflection on current pedagogy and improved course design:** Participation in a FLC can give faculty an opportunity to introspect, reflect, and re-evaluate their current courses and to consider how new methods of teaching may best be used to achieve their course learning outcomes. Learning from peer experiences may be helpful in this process of reevaluation and change. The implication for higher education is the suggestion that professional development models like faculty learning communities, have the potential to encourage faculty to bring about substantial changes in teaching practices and course design by enabling purposeful reflection on current practices.
- **Perceived impact on student learning:** FLCs can potentially help faculty to bring about changes in course design through inclusion of new tools and methods of teaching that may have a positive impact on student learning, provided faculty make actual changes in course design and teaching practices.
- **A learning community may consist of faculty at different stages of adoption:** Faculty at different stages of adoption of pedagogical practices and educational technology may be able to benefit by participating in a FLC. Often an FLC becomes a space where faculty can overcome the barriers of institutional silos, to engage in peer instruction and help each other problem solve.

Conclusions

The results of this study suggest that participating in a FLC focused on e-portfolios can increase faculty members teaching confidence, knowledge of relevant pedagogic topics, engagement with peers and FLC facilitators, as well as knowledge of how to use e-portfolios for better assessment, course design, and teaching. In addition, participating in a FLC can help faculty see how the integration of technology into their classrooms can help improve student learning. Thus, a FLC is not only a time-tested way to introduce and engage faculty with pedagogical strategies and educational technology but also a space where faculty at different adoption levels may learn from each other and in turn improve how they teach and ultimately student learning.

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