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College Students' Motivation and Confidence for ePortfolio Use

Megan E. Douglas, Scott Peecksen, Jordan Rogers, and Mike Simmons
University of North Texas

Research has consistently demonstrated the benefits of using ePortfolios in higher education and the Association of American Colleges and Universities (AAC&U) added ePortfolios to its High-Impact Practices list (Watson, Kuh, Rhodes, Light, & Chen, 2016). The majority of studies on college students' ePortfolio use have focused on implementation within a specific course or from a faculty perspective. Given the important benefit of ePortfolios for lifelong student learning, it is important to assess factors which impact intrinsic motivation from a student-centered perspective. This paper details a study of college students' motivation and confidence to use an ePortfolio system as part of a university-wide quality enhancement plan that included high-impact, experiential learning activities. This study also explored college students' personal values and their perceived advantages and disadvantages of ePortfolio use within the context of experiential learning and reflection. Data were analyzed from 339 student responses from a survey constructed based on motivational interviewing. Overall, students reported low levels of motivation and moderate levels of confidence to use ePortfolios. In addition, students who had participated in an experiential learning activity through the university's QEP reported higher confidence than those who had not. Factors identified as potentially impacting students' motivation and confidence to use ePortfolios are discussed in terms of how they can support strategies to implement ePortfolio and experiential learning programs in large, 4-year college institutions.

ePortfolio Use in Higher Education

Over the past decade, higher education institutions have increasingly begun to implement ePortfolios across a range of disciplines in undergraduate and graduate courses (Gordon, 2017; Ivanova, 2017; Mason & Williams, 2016; McWhorter, Delello, Roberts, Raisor, & Fowler, 2013; Mihret, Abayadeera, Watty, & McKay, 2017; Munday, 2017). ePortfolios are multi-modal evidence-based, digital learning tools that promote student and faculty collaboration and cultivate meaningful learning experiences in a central place through a tailored compilation of student artifacts that demonstrate specific knowledge, skills, and attitudes (Batson et al., 2017; van Wyk, 2017). A 2012 Authentic, Experiential, and Evidenced-Based Learning survey was administered to educators, practitioners, and ePortfolio technology vendors from 13 countries and 97 institutions (Brown, Chen, & Gordon, 2012). Brown et al. (2012) reported a 13 percentage-point increase in the number of respondents who reported that 90-100% of their students were building ePortfolios as compared to 2011 survey results. A 2013 EDUCAUSE survey found that 57% of higher education campuses across the United States have "made some use" of ePortfolios at the program or course level within their particular institution (Dahlstrom, Walker, & Dziuban, 2013).

The Association of American Colleges and Universities (AAC&U) added ePortfolios to its High-Impact Practices list (Watson et al., 2016) based on a proliferation of research on student ePortfolio use (Kahn, 2014) and its benefits to student learning (Love, McKean, & Gathercoal, 2004), including making learning visible through written reflection, encouraging in-depth thinking (Eynon, Gambino, & Török, 2014),

and enhancing metacognitive strategies (Huang, Yang, Chiang, & Tzeng, 2012). The acknowledgement of ePortfolios as a high-impact practice (HIP) has led to increased application of ePortfolios to promote students' learning across a variety of institutions in different formats. Although ePortfolios generally share basic underlying technologies, these platforms can differ widely in design, openness, sharing capabilities, and learning curve for usage (Morphew, 2012). Additionally, the level of implementation of ePortfolios and the buy-in from users (i.e., educators, administrators, and students) can differ greatly across institutions. Thus, this widespread and divergent application of ePortfolios underscores the importance for continued implementation research.

In the study discussed in this paper, we sought to extend the literature on ePortfolio implementation by examining students' motivation and confidence to use ePortfolios across a university and from a student perspective, an important but relatively under-researched topic (Mobarhan, Majidi, & Abdul Rahman, 2014). Understanding the perspectives of all users and improving the communication among them can enhance what McWhorter, Delello, Roberts, Raisor, and Fowler (2013) described as a virtual community of practice. In other words, data regarding students' ePortfolio use can be shared to promote quality ePortfolio practice and implementation in higher education.

This paper will briefly review the current literature on students' ePortfolio use in higher education and present qualitative and quantitative results from a student-centered survey. We will also describe a university-wide implementation of an ePortfolio system that includes engagement in reflection, student-level assessment, and experiential learning activities for select groups of students.

Literature Review

Benefits of ePortfolio Use for Higher Education Students

ePortfolios have been widely utilized by higher education institutions because of the numerous opportunities for learning, reflection, student collection and management of learning artifacts for their entire college career, and faculty feedback (Bryant & Chittum, 2013; Toner & McDowall, 2018; Roberts, 2018). ePortfolios can serve as a student-centered pedagogy where learners, including English language learners (Ivanova, 2017), are responsible for self-authorship. Learners use ePortfolios to map artifacts and make connections through reflection that is supported by peer and instructor feedback (Kehoe & Goudzwaard, 2015; Yancey, 2015). ePortfolios can also provide valuable support to students as they navigate challenges that arise throughout their college experiences, mediate dissonance that accompanies awareness, and develop confidence across multiple contexts (Buyarski et al, 2015). Additionally, the digital application serves as a mechanism through which educators can facilitate and monitor student learning outcomes (Ellis & Kelder, 2012).

Importantly, ePortfolios not only serve as digital repositories for cataloging ideas, evidence, reflection, experiential learning, achievements, assessments, and feedback throughout students' educational experiences but they also provide students with opportunities to track the process of their learning across time (Gordon & Campbell, 2013; Nguyen & Ikeda, 2015; Roberts, 2018; Volmer, & Sarv, 2018). The ability to store and connect curricular and co-curricular experiences in a central location fosters reflective learning, encourages future planning with purpose, and can be a powerful catalyst for students to develop holistic identity and integration (Kehoe & Goudzwaard, 2015; Kirkham et al., 2009). Furthermore, ePortfolios have shown promise in fostering self-agency and developmentally appropriate strategies for integrating academic, co-curricular, personal, and professional dimensions of self (Kehoe & Goudzwaard, 2015; Munday, Rowley, & Polly, 2017; Rowley & Munday, 2014; Sidebotham, Baird, Walters, & Gamble, 2018).

When applying for education jobs, students who submit ePortfolios may be viewed as more competitive by human resource and school administration staff. This is because applicants with ePortfolios can clearly demonstrate characteristics congruent with the potential job while also displaying a deeper and more complete level of learning (Painter & Wetzel, 2005; Snoeyink, & Meyer, 2007; Yu, 2011). A comprehensive review of the literature on ePortfolio research through 2012 indicates that—when properly implemented with clear guidelines and expectations, and with adequate technology resources—ePortfolios can make significant contributions to student learning (Bryant & Chittum, 2013).

ePortfolio Use Through the Implementation of a University's Quality Enhancement Plan

The present study's university designated ePortfolio use as a cornerstone of its 2016/26 Quality Enhancement Plan (QEP). In an effort to implement this HIP across campus, the QEP provided all university students with access to the ePortfolio system as soon as they were enrolled. All students had the opportunity to log into their ePortfolios through the university's website and were encouraged, but not required, to use their ePortfolios through faculty promotion and student marketing, training, and resources (e.g., freshman orientation programming; department, faculty, staff, and student trainings; and online resources on ePortfolio use). QEP staff promoted the ePortfolio system as a free resource that students can use—for their entire lifetime, if they graduate from the present study's university—to document and showcase their marketable skills and learnings in and outside of college. University administrators, faculty, and instructional staff also promoted the ePortfolio system as a free resource that faculty can use to develop HIPs (for an explanation of HIPs, see Kuh, 2008) among students. Educational and career development ePortfolio activities were thus integrated into faculty courses and staff programs on a voluntary basis. Such ePortfolio activities included (a) developing online identity pages; (b) using ePortfolios to collect and share products, learnings, or projects from university coursework; and (c) creating job-specific ePortfolio web pages.

The second cornerstone of the QEP built on the university's ePortfolio approach by implementing experiential learning, written reflection, and marketable-skills assessment activities through the ePortfolio system. While promoting faculty and students' ePortfolio use in general across the university, the QEP also worked directly and collaboratively with university divisions, departments, faculty, staff, students, and community partners to incorporate experiential learning activities into university curricular and co-curricular courses and programs. QEP staff provided broad-based and department-level marketing and multiple individual- and university-level trainings for faculty and staff regarding the incorporation of experiential and service-learning pedagogies, and ePortfolio reflection and assessment activities, into their courses and assignments. QEP staff also offered grants to fund faculty and staff in developing or redesigning their courses to incorporate experiential learning.

These experiential learning activities provided students with concrete opportunities to engage in

problem-solving and hands-on learning in "real-world" settings such as class or non-credit internships, study abroad, service learning or capstone courses; research, volunteer, or course projects; and on- or off-campus student employment. Additionally, these experiential learning activities targeted and assessed student proficiency in employer-valued marketable skills and required students to document learnings, upload artifacts and projects, and reflect on their experiences in writing through the university's ePortfolio system (Hart Research Associates, 2018; National Association of Colleges and Employers, 2018).

University faculty and staff used a variety of experiential learning activities or assignments across several disciplines, including food drives and school supply deliveries, upcycling, tax-service support and translation services, social science research, semester-long laboratory work in engineering, museum curation services, public presentations, and providing social support to the elderly. Experiential or service-learning pedagogies guided all assignments where students learned through action and were purposely engaged in both direct experience and focused reflection to increase knowledge, develop skills, and clarify values. For all such assignments, written reflection and individual assessment through the university's ePortfolio system allowed students to document their acquired skills, reflect on how their experience connected to their knowledge and career interests, and record how they felt about their experience. This practice helped students to solidify the connections made between learning and the application of marketable skills.

Participation in QEP experiential learning activities also allowed students to showcase earned micro-credentials targeting written and oral communication, teamwork, and critical thinking. Students earned a marketable skills micro-credential for the successful completion of each experiential learning activity. Students who earned a micro-credential also had the opportunity to earn a university-backed credential on an alternative transcript if they went on to complete three or more of the same micro-credentials in the future. This transcript can be shared with potential employers.

In order to maximize the success of this QEP within a large and diverse public university, the present study identified and explored factors related to the motivation and confidence to use ePortfolios (as reported by students). We plan to use these factors to inform future strategies for increasing students' ePortfolio use at this university and other large, four-year universities.

ePortfolio Use from a College Student Perspective: Attitudes and Perceptions

Ample research that focuses on ePortfolio use from a student perspective has only recently been published.

Through 2009, Gerbic, Lewis, and Northover (2009) identified only 18 studies on ePortfolio use from the student perspective. Most of these studies included undergraduate students and the majority were students from teacher education courses. For example, Lin (2008) studied student teachers who reported positive attitudes about their ePortfolio use and several benefits, including learning through reflection, developing assessment skills, receiving feedback from peers, and learning how to organize and synthesize information.

Since 2009, much research has been published on ePortfolio use. Specifically, AAC&U's Publications on ePortfolio: Archives on the Research Landscape website contains more than 500 published articles on ePortfolio use with the majority published after 2009 (see https://eportfolio.aacu.org/). Several of these studies are based on students' perspectives in higher education and focus on students' perceptions and attitudes regarding their ePortfolio use or experiences. For example, Toner and McDowall (2018), Rahman and Mohamed (2017), and Ryan (2018) found that student nurses had positive views on ePortfolios because they allow for the collection of student artifacts, the receipt of faculty feedback and student assessment, and the long-term documentation of personal and professional development. Midwifery students who used ePortfolios for self-assessment reported that the practice helped them develop and articulate a personal practice philosophy for their profession (Sidebotham et al., 2018).

Collins and O'Brien (2018) found that nursing students who used ePortfolios to present and assess their clinical work reported the following advantages: the ability to track, reflect on, and share evidence of learning with faculty and future employers; improved learning and security; and the efficient receipt of feedback from faculty. Reported disadvantages of ePortfolio use included technical difficulties with uploading learning artifacts or lack of time or guidance for creating or using student ePortfolios.

Other studies (Birks, Hartin, Woods, Emmanuel, & Hitchins, 2016; Parker, Ndoye, & Ritzhaupt, 2012; von Konsky & Oliver, 2012; Wakeling, Aldred, & Hains-Wesson, 2018) have also examined ePortfolio use from a student perspective in the education, health science, food science, business, or nursing fields. These studies noted that students report similar advantages (e.g., tracking evidence of learning over time, improved employability) and disadvantages (e.g., technical difficulties and the time-consuming effort to create an ePortfolio). Additional studies have indicated that college students' attitudes towards ePortfolio use is associated with career-commitment status and perception of ePortfolio purpose, technical difficulty, instructor guidance, and students' willingness to disclose personal information in their ePortfolios (Gaitán, 2012; Tzeng & Chen, 2012).

ePortfolio Use From a College Student Perspective: Motivation and Confidence

Few studies have focused on college students' motivation or confidence to use ePortfolios (Balaban, Mu, & Divjak, 2012; Mobarhan et al., 2014). Our literature through 2018 found less than 25 articles that included motivation and confidence in their discussion of ePortfolio use. Additionally, these 25 identified articles varied in ePortfolio application (e.g., professional, graduate, or undergraduate), program focus (e.g., nursing or teacher education), country, ePortfolio platform, and institution type (e.g., online, public, and private universities). These articles often focused on a specific course or discipline rather than ePortfolio use across an entire institution. Finally, we found no studies that focus on college students' confidence in using ePortfolios. We instead found studies that examined students' confidence in general, confidence in their ability to reflect, or confidence to complete their course work using an ePortfolio or to use technology in general (Chang, 2018; Cheng & Chau, 2009; Kabilan, 2018; Sidebotham et al., 2018; Vachon, Foucault, Giguère, Rochette, Thomas, & Morel, 2017).

Similarly, the majority of studies investigating ePortfolio use and motivation have not focused on students' motivation to use ePortfolios, but on motivation to learn, reflect, work, or read (Beckers, Dolmans, Knapen, & van Merriënboer, 2018; Chittum, 2018; Mohamad, Embi, & Nordin, 2016; Refaei, & Benander; 2016; Weber & Myrick, 2018). The few studies that examined students' motivation to use ePortfolios reported several factors that may be associated with motivation. For example, Tosh, Light, Fleming, and Haywood (2005) examined first-time ePortfolio use among undergraduates from two universities. They found that students reported a number of factors as relevant to their motivation to use ePortfolios. Such factors included students' reported buy-in for using ePortfolios, the perceived value and benefits of using ePortfolios for self-promotion and assessment, difficulties in understanding how to use ePortfolios and the length of time required to learn how to create an ePortfolio.

Tuksinvarajarn and Todd (2009) reported that students' motivation to use an ePortfolio was enhanced by having a quality ePortfolio system design, one that provided feedback and rewards. Klampfer and Köhler (2015) found significant and moderate correlations between motivation to use ePortfolios and a variety of factors such as social norms (e.g., the use of ePortfolios as standard practice), perceived usefulness and benefits of ePortfolios, and the quality, usability, and relevance of the ePortfolio system. Buchem (2012) and Chye, Liau, and Liu (2013) stated that students who reported intrinsic forms of motivation such as receiving value or enjoyment from ePortfolio use were more likely to report positive views of ePortfolios. Similarly, Chang, Lee, and Millis (2016) found that nursing students' motivation is based on ease of use, the ePortfolio's potential for long-term application, and the likelihood of beneficial outcomes as a result of ePortfolio use.

All of these motivation-focused studies identified factors that are aligned with the four extrinsic and intrinsic motivational categories for student ePortfolio use as recently posited by Mobarhan, Rahman, and Majidi (2015). Mobarhan et al. (2015) investigated students' experiences with and motivations for using a university's ePortfolio system on the basis of theoretical and empirical support for the relationship between student motivation and learning (Deci, Koestner, & Ryan, 2001; Glynn, Aultman, & Owens, 2005; Maclellan, 2008). These authors administered semi-structured interviews to 15 college students from a Malaysian public university.

Mobarhan et al. (2015) summarized student ePortfolio use as intrinsically or extrinsically motivated and includes various motivational categories, factors, and descriptions that universities, developers, and administrators should include when developing ePortfolios systems for students. Examples of the motivational categories include system (e.g., system and information quality), individual (e.g., competence in ability to navigate ePortfolio technology and prior ePortfolio experience), social (e.g., social norms and the value of positive feedback for continuation of usage), and environmental (e.g., ownership of the ePortfolio technology and the quality of the technology). A similar concept proposed by Helen Barrett (2007) also emphasizes the importance of studying intrinsic and extrinsic motivation. Barret (2007) argued that enhancing learner ownership through scaffolding can ultimately enhance intrinsic motivation and continued lifelong learning.

Purpose of Study

Students' motivation and confidence are arguably important factors for enhancing student learning outcomes through the creation of ePortfolios (Mobarhan et al., 2014; Tosh et al., 2005). Without motivation and confidence, students may not provide much effort in ePortfolio development or any associated learning tasks. The purpose of this study is to understand students' motivation and confidence to use ePortfolios by examining why students use ePortfolios and what they perceive as the advantages and disadvantages of their use. This study builds on the literature in several ways.

Bryant and Chittum (2013), in a major review of existing ePortfolio research through 2012, argued for more empirical research on students' ePortfolio use and

student outcomes, both academic and non-academic (motivation is one such example). In addition, our review of the literature indicates that only two of these studies (Hains-Wesson, Wakeling, & Alfred, 2014; von Konsky & Oliver, 2012) examined students' perceptions of ePortfolios at the university level and across multiple disciplines. The majority of previous ePortfolio studies have included one or only a few particular areas of study, such as teacher education or nursing. Students' motivations and confidence about university-wide ePortfolio use may be notably different from their motivations about ePortfolio use within a single class, school, or major. Additionally, few research studies have thoroughly examined the factors impacting student motivation to use ePortfolios. Educators need to better understand why students are using ePortfolios and what resulting benefits students expect from their use (Mobarhan et al., 2014; Tosh et al., 2005).

The current study also builds on Mobarhan et al.'s (2014) study by applying an analytic framework that results not only in the identification of motivational and confidence factors, but students' reported suggestions for enhancing them. Using a student-centered approach for implementation will help ensure that students remain an active agent in their learning and hopefully increase the likelihood that they maximize the usefulness of the ePortfolio. Finally, using Barrett's (2007) framework, the current study may inform future university-wide ePortfolio adoption efforts by identifying and better understanding the factors that contribute to greater learner ownership and intrinsic motivation for ePortfolio use.

Methodology

Participants and Procedures

This study recruited participants by e-mailing all ePortfolio users enrolled at the present study's university who had at least activated their account by creating a password for their ePortfolio log-in. In February 2018, a link to an online survey was sent out to 6,803 student ePortfolio users. It should be noted that the university encouraged but did not require all students to use their ePortfolios or enroll in courses or programs that had incorporated experiential learning activities. Thus, the present study is limited to students who did actually follow through with their accounts; hereinafter, these participants will simply be referred to as *ePortfolio users*. Students consented electronically by entering their individual student ID before proceeding with the survey. The survey was open for three weeks with weekly reminders to increase response rates. Students were also offered the chance to be included in a drawing for one of five prize bags with an estimated value of $15 to $30, upon completion of the survey.

Data Collection Framework

Using a student-centered perspective in the present study, we developed a survey grounded in Miller and Rollnick's (2013) Motivational Interviewing (MI) framework. The primary purpose of this person-centered framework is to strengthen an individual's motivation for change towards specific behaviors by eliciting their own motivation and confidence. Traditionally, MI is a collaborative conversation for strengthening a person's own motivation and commitment to change by supporting personal values and eliciting change talk to address ambivalence (Miller & Rollnick, 2013). We used this underlying framework to gain insight into students' motivation for, and confidence in, using ePortfolios in the context of experiential learning tasks and activities. The most relevant MI principles applied to this study include:

- People are the experts on themselves. No one knows more about them than they do.
- People have their own strengths, motivations, and resources that must be activated in order for change to occur.
- It is important to understand the person's own perspective on the situation, what is needed, and how to accomplish it. (Miller & Rollnick, 2013, p. 23)

Using this framework, we examined motivation and confidence levels of students across a variety of disciplines for using an ePortfolio system in the near future (i.e., over the next week). We also investigated students' personal values associated with the perceived advantages and disadvantages of their ePortfolio use. MI is traditionally used in talk therapy as a goal-directed treatment tailored to each individual; however, MI and motivational enhancement therapy (a more structured protocol adaptation) have also been used in text-based or online applications. Although in the present study we designed the survey around MI principles and utilized MI components (e.g., readiness ruler and values sort), it is not an actual application of talk therapy or MI in its traditional form. Rather, we used MI as a guiding framework to elicit responses from a student-focused perspective with the overall goal of enhancing likelihood of ePortfolio usage based on intrinsic attitudes, motivation, confidence, and guiding values. Below, we discuss each component of the survey and its adaptation from traditional MI tools.

Measures

In this study, we assessed motivation and confidence for using ePortfolios by administering motivation and confidence rulers along a visual analogue scale ranging

from 0 (*Not at all motivated/confident*) to 10 (*Very motivated/confident*). The motivation instructions were: "On a scale of 0 to 10, how motivated are you this week to create or use the ePortfolio?" Confidence instructions were: "On a scale of 0 to 10, how confident are you that you *could* create or use the ePortfolio this week?" The questions were framed to ask about motivation and confidence levels over the next week to gauge real-time likelihood of using the ePortfolio system. The motivation and confidence rulers were adapted from the Importance or Readiness Ruler originally developed by Butler, Rollnick, Cohen, Russell, Bachmann, and Stott (1999). Each ruler quantitatively assessed the participant's current motivation or confidence separately for using the ePortfolio over the coming week. Display logic altered the presentation of subsequent qualitative items based on the initial motivation response. For example, students who rated their motivation as a 0 subsequently viewed a free-response item: "What led you to choose a 0? Please explain in a few sentences below." Students who rated 2 or higher viewed the item: "What led you to choose a [rating response] instead of a 0 or 1?" All participants were then asked to explain what it would take to increase their motivation rating, with the exception of those who reported 10, the highest rating. Participants who reported the highest rating were prompted to explain their choice: "Can you explain what led you to choose a 10 for the previous question?" The same process was repeated for the confidence ruler, and all items required responses to progress through the survey.

Next, participants were provided with a description of QEP experiential learning activities that emphasized reflection and ePortfolio use and were asked whether they had "participated in an experiential learning activity before, such as through a course assignment or internship?" and provided with a yes/no forced response. Based on this response, to gauge perceptions of ePortfolio use in conjunction with the experiential learning activity, students were asked to describe the advantages and disadvantages: "What do you imagine would be the advantages/disadvantages of critically reflecting on experiential learning within the ePortfolio?" Online survey instructions and description of experiential learning activities are provided the Appendix.

Both the advantages and disadvantages responses and the explanation of motivation and confidence ratings were collected in a free text response format. A conventional qualitative content analysis plan was used for all qualitative data. Responses were visually examined by coders and subsequently coding categories were derived from the raw data. Then, the coding categories were used to review responses and derive common themes. Examples of these themes were chosen for illustrative purposes and are presented in the results.

In line with MI principles, a personal value activity list was included to connect students' motivation and confidence with their reported intrinsic values. In the present study, we sought to include this tool to gain a better understanding of what student values are ranked as most important overall in an effort to align marketing messages and instructional materials with what is most important to students. The value list was adapted from Miller's Values Card Sorting activity for the electronic survey platform (Miller & Rollnick, 2013). Eighty-three personal value words and their descriptions (plus an "other" option) were presented in a list. Participants were asked to "review each word and choose at least 10 words that are very important to you by selecting the checkbox next to those words." On the subsequent page, participants were prompted to "rank value words in order of importance" using a rank-order feature with first order indicating the *most important value*, the second indicating *the next most important*, and so on.

Results

Demographics and Response Rate

Of the 6,803 e-mails sent out to student ePortfolio users, 527 surveys were initiated and 362 survey responses were received. Survey responses were then matched with university demographic data using student ID numbers. Some survey responses did not include active or accurate student ID numbers, so to ensure that survey responders were current students, only the responses for existing ID numbers on file were used ($N = 339$), resulting in about a 5% percent response rate. Detailed demographic data are provided in Table 1. This study's analytic sample had more females (76.1%) than males (23.94%). About 90% of survey responders were classified as undergraduates and the average age was 22.14 years ($SD = 6.74$). Figure 1 shows the frequency distribution of students across different schools and colleges ($n = 14$), with the largest representation coming from the College of Liberal Arts and Social Sciences (25.7%).

Out of the 339 ePortfolio users, almost 20% of students ($n = 67$) indicated that they had participated in an experiential learning activity (e.g., through a course assignment or internship), 64% percent ($n = 217$) reported that they had not participated in an experiential learning activity, and 16.2% ($n = 55$) did not respond.

Motivation and Confidence to Use ePortfolios

The average rating for the motivation ruler was 3.43 ($SD = 2.75$) and the average confidence rating was 5.85 ($SD = 3.40$). Independent samples *t* tests were run to determine if there were differences in motivation and confidence based on whether or not students had

Table 1
Sample Characteristics

		Frequency	Percentage
Gender			
	Women	258	76.10
	Men	81	23.94
Ethnicity			
	White	148	43.70
	Hispanic	86	25.40
	African-American	39	11.50
	Asian/Pacific Islander	30	8.80
	Non-Resident	30	8.80
	American Indian	5	1.50
	Other	1	0.30
Classification			
	Senior	87	25.70
	Junior	80	23.60
	Sophomore	71	20.90
	Freshman	69	20.40
	Master's	22	6.50
	Doctoral	6	1.80
	Post-Bac	4	1.20

Note. N = 339.

Figure 1
Frequency Chart Showing the Survey Responders by College Classification
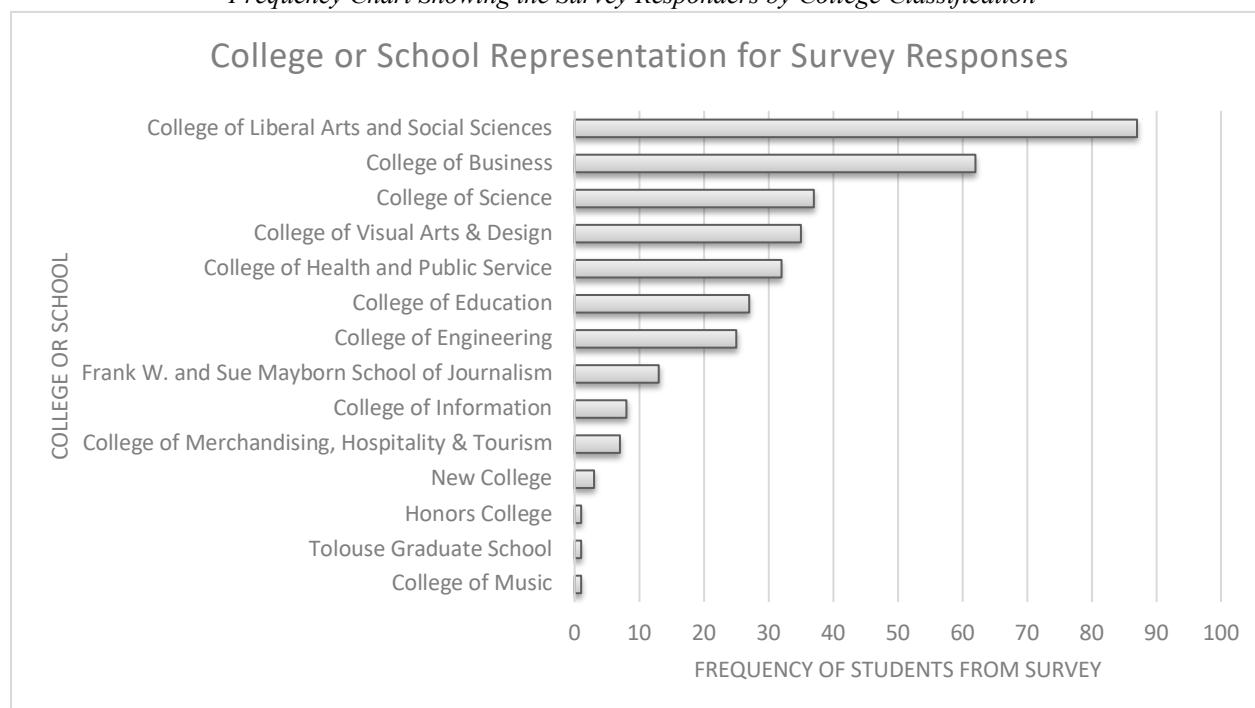
Note. New College is the present study's university new off-site instructional facility that focuses on providing a workforce of business and tech leaders and problem-solvers.

participated in an experiential learning activity. Results indicated no statistically significant difference in motivation ratings between those who had ($M = 3.45$) and had not participated ($M = 3.24$) in an experiential learning activity, $t = 0.526$, $df = 282$, $p = .599$. Conversely, a statistically significant difference was found for confidence, $t = 2.17$, $df = 282$, $p = .030$. Students who participated in an experiential learning activity (compared to those who did not) reported higher confidence ratings for using the ePortfolio ($M = 6.66$ and $M = 5.63$, respectively).

Reasons for Motivation and Confidence

We also conducted content analysis of qualitative responses to ascertain the rationale for why students chose their motivation and confidence level ratings to identify emerging themes; the reported reasons or factors were organized by the following rating groups: low motivation, high motivation, 10-level motivation, low confidence, high confidence, and 10-level confidence. Low motivation and confidence rating responses were clustered based on rating responses less than or equal to 4 ($n = 182$), high motivation users were clustered based on ratings between 5 and 9 ($n = 146$), and those who chose a 10 (the highest possible rating; $n = 10$) were labeled as 10-level. Table 2 presents the main factors associated with why users chose a low,

high or, 10-level motivation rating, and it also presents what low, high, and 10-level users believed would enhance their motivation. The same results for confidence ratings are presented in Table 3.

Advantages and Disadvantages of ePortfolio Use

Content analysis was also completed on student responses to a question about experienced or anticipated advantages ($n = 269$) and disadvantages ($n = 265$) of participating in experiential learning activities that require student creation and use of ePortfolios for documenting their learning. Results are presented next and are grouped by overall advantages and disadvantages. Students commonly reported advantages such as benefits derived from documenting, reflecting on, and showcasing student learning experiences. Commonly reported disadvantages included technological challenges and too much time invested to complete an ePortfolio.

Advantages. Overall, perceived and imagined advantages of ePortfolio use were summarized as providing a convenient platform to host and exhibit experiences (e.g., "It allows us to put on record what we learned and what we accomplished."), enhancing reflection of experiential learning (e.g., "The task makes me reflect on what I did wrong and what I did

Table 2
Examples of Student Responses for Using the ePortfolio by Motivation Rating Level

	Rationale	Enhancement
Low	Don't know how/ understand	Information about benefits/ use
	Useless/ Irrelevant	Have a reason to use it (e.g., extra credit)
	Schedule/ time constraints	Electronic features (attractiveness)
	Difficult to use	One-on-one assistance
	Use another ePortfolio	Required by classes
		More time or reduced workload
High	Don't know how/ understand	One-on-one assistance
	Haven't used it yet, but willing	Explanation of purpose and benefits
	Looking for jobs or internships	External motivation (closer to graduation)
	Course requirement	Better advertisement
		External reminders (e.g., e-mails)
		More time or reduced workload
10-level	Enhances abilities and motivation	
	Assignment due this week	
	Assists with project sharing	
	Utilized for student teaching	
	Had previous experience with ePortfolio	
	Required by degree program	

Note. Sample sizes differed for each group: low motivation (ratings less than or equal to 4) $n = 182$, high motivation (ratings between 5 and 9) $n = 146$, 10-rating $n = 10$, and 1 user did not respond. $N = 339$.

Table 3
Examples of Student Responses for Using the ePortfolio by Confidence Rating Level

	Rationale	Enhancement
Low	Don't know how/ understand	Course or degree requirement
	Irrelevant	More interesting or novel features
	Schedule/ time constraints	Explanation of purpose and benefits
	Lack of experience or preparation	Additional instruction or explanation
	Prefer to use different platforms	More time or reduced workload
		Video tutorial
High	Prior experiences	Course or degree requirement
	Course or degree requirement	Video tutorial
	Has received instructions	Explanation of purpose and benefits
	Self-efficacy for use	Evidence of benefits/ outcomes
		Additional instruction or explanation
		Better features (e.g., visual appeal)
		More time or reduced workload
10-level	Ease of task	
	Prior instructions or experience with ePortfolio	
	Technology self-efficacy	
	Regular utilization	
	Past course or degree requirement	

Note. Sample sizes differed for each group: low confidence (ratings less than or equal to 4) $n = 104$, high confidence (ratings between 5 and 9) $n = 130$, 10-rating $n = 63$, and 42 users did not respond. $N = 339$.

right. It makes me reflect on how the activity benefited me, and how I could improve."), preparing for interviews or job applications (e.g., "Prepare myself for any possible questions in an interview and understand how I can better myself to employers."*), and solidifying identity and growth, for example:

> I feel that participating in something like that might be an eye-opener to the individual. I realized some things about myself that I might not have paid attention to previously, that could in turn make me more marketable should I choose to shine a little more light on those skills.

Additionally, some imagined advantages echoed the sentiments expressed in the motivation and confidence responses; for example, one student said participating (e.g., "might help me better understand the purpose").

Disadvantages. Disadvantages included the amount of time (e.g., "It takes time to complete them.") and problems with the technology interface (e.g., "Sometimes ePortfolio [shows] an error such as asking me to verify something, and that confuses me. ePortfolio is more confusing than Blackboard."). Many students also explained how perceived disadvantages might be a benefit ("It is a double-edged sword…it could make that individual question...[his/her] motivation for a career/education switch, for fear of starting from scratch to learn a new or quite possibly, more rewarding skill."). About one-third of students who had no previous participation reported no perceived disadvantages.

Value-words that were chosen by students at the end of the survey were collated into the top 10 frequently endorsed value words out of the 83 possible words and the "other" option. The ten most frequently endorsed items were as follows: self-acceptance ($n = 128$), caring ($n = 125$), adventure ($n = 124$), achievement ($n = 122$), dependability ($n = 121$), compassion ($n = 117$), purpose ($n = 112$), comfort ($n = 107$), family ($N = 107$), and friendship ($N = 105$).

Discussion

Study results indicate that students who used the ePortfolio system across a large and diverse public university also reported low motivation and moderate confidence to use ePortfolios. Several factors may be related to these outcomes. These factors, identified from a student-centered perspective, could be targeted by universities that wish to implement ePortfolio systems; they include: (a) participation in experiential learning activities; (b) understanding of, prior experience with, competence in, and social norms regarding students' ePortfolio use; (c) the quality of the ePortfolio system and the usefulness of the guidance or instructions for using it; (d) perceived advantages of ePortfolio use and its capabilities, including the benefits derived from documenting, reflecting on, and showcasing students' career-identities and learning experiences for potential job opportunities; and (e) perceived disadvantages of ePortfolio use such as technical difficulties and the high-

level of time commitment. Many of these factors (e.g., prior experience with ePortfolio systems, academic and career benefits, social norms, ePortfolio system quality, technical difficulties, and time burdens) are supported by existing literature as being associated with or as relevant to students' motivation to use ePortfolios (Birks et al., 2016; Collins & O'Brien, 2018; Garrett, Thoms, Alrushiedat, & Ryan, 2009; Klampfer & Köhler, 2015; Parker et al., 2012; Ryan, 2018; Tosh et al., 2005; Tuksinvarajarn & Todd, 2009; Yu, 2011). Moreover, these factors are theoretically supported by the four extrinsic and intrinsic motivational categories identified by Mobarhan et al. (2015) as beneficial for universities, developers, and administrators to include when promoting ePortfolios systems for students. The system (e.g., the capabilities and quality of ePortfolio system), individual (e.g., technological self-efficacy), and social (e.g., utilized by faculty for teaching) categories were well represented in the current study's results.

Study results also helped to address if students' motivations regarding university-wide ePortfolio use may differ from their motivations for ePortfolio use within a class, school, or major. These current results, and results from other studies that also examined ePortfolio use at the university level from a researcher, faculty, or student perspective (Hains-Wesson et al., 2014; von Konsky & Oliver, 2012), suggest similarities in the factors that motivate students to use ePortfolios within and across university colleges or departments. The one exception was students' preference to use a different ePortfolio system. Students' preference to use a different ePortfolio system was identified as a factor associated with motivation in the current study, but has not been identified or identified frequently in the previous literature. This individual-level factor may be unique to large and diverse colleges or populations such as the one in this study.

Findings on students' confidence to use ePortfolios are unique to the literature because few, if any, published studies to date have directly examined students' confidence to use ePortfolios, especially within the context of a large and diverse student population. The present study indicates similarities in the factors that students reported as influencing both their motivation and confidence to use ePortfolios. That is, most identified factors for confidence could be grouped within the four extrinsic and intrinsic motivational categories recently recommended by Mobarhan et al. (2015) for university-wide ePortfolio initiatives. The exception to these similarities was students' participation in experiential learning, which made a significant difference in students' reported levels of confidence, but not in their reported levels of motivation.

One reason for this exception could be attributed to the lack of full implementation and marketing of the participating university's ePortfolio, experiential

learning, and student-level assessment activities through its QEP. To explain, a cornerstone of this 2016/26 QEP is its experiential learning activities, which require student-level assessment and allow students to earn marketable skills micro-credentials by documenting and uploading student artifacts within their ePortfolios. These student artifacts are developed from their engagement in experiential learning activities and are independently rated within their ePortfolios. Artifacts are scored for proficiency by staff or faculty who use marketable skills rubrics adapted from AAC&U (2019). Arguably, students' participation and assessment within these experiential learning activities should have made a difference in their reported level of motivation to use ePortfolios (Tosh et al., 2005; Tuksinvarajarn & Todd, 2009; von Konsky & Oliver, 2012).

However, at the time of this study, the 2016/26 QEP was in its first year of implementing and marketing its experiential learning and individual assessment activities, which are not required for all university students. Only about half of the university's departments incorporated experiential learning activities into one or more of their courses or programs. Therefore, it is possible that many students who used their ePortfolios within experiential learning activities were not aware of, or did not engage in the required assessment components and opportunities to earn micro-credentials in marketable skills. This may have been why participation in experiential learning activities did not make a difference in students' reported level of motivation to use ePortfolios.

Lack of awareness and lack of knowledge concerning the assessment component of the QEP may also explain why all students who used the ePortfolio, regardless of whether they participated in experiential learning activities, reported low overall levels of motivation. As the QEP continues to expand its implementation and its marketing of the assessment component through ePortfolio and credentialing systems across the university, students' awareness and engagement are likely to increase, which may lead to higher levels of reported motivation to use ePortfolios. We plan to test this assumption by replicating this study for the QEP annually. Since the current study's survey administration, the number of departments participating in the university's QEP has increased, and the number of student ePortfolio users within the university has more than doubled.

Implications

This study extends the literature by helping to address Bryant and Chittum's (2013) call for more research on students' ePortfolio use and non-academic outcomes such as motivation and confidence, and Mobarhan et al.'s (2014) call for more research on

factors associated with students' motivation to use ePortfolios.

The current study's findings can also help other universities identify student motivational and confidence factors that need to be included when implementing ePortfolio initiatives across their campuses (Mobarhan et al., 2015). For example, many of these factors are currently targeted by the large, four-year university that participated in this study. Their campus-wide QEP works to enhance student learning outcomes and increase students' motivation and confidence to use ePortfolios by engaging them in experiential learning, ePortfolio, reflection, and assessment activities as previously described in this study.

Given that many published studies have reported student benefits from both using ePortfolios as a HIP (Watson et al., 2016) and from engaging in experiential learning activities (Helle, Tynjälä, Olkinuora, & Lonka, 2007; Svinicki & McKeachie, 2014), other universities might consider combining these approaches to enhance not only confidence and motivation to use ePortfolios but also student learning outcomes in general. Student and faculty educational approaches, professional training, or skills workshops that combine these approaches and target the factors identified in this study may boost students' motivation and confidence to use ePortfolios while also resulting in a myriad of other positive student learning outcomes. Such approaches to ePortfolio use can significantly enhance student learning outcomes if they are implemented with sufficient technology resources as well as clear guidelines and expectations for ePortfolio use (Bryant & Chittum, 2013).

Such combined approaches could also address students' reported disadvantages of ePortfolio use by providing easily accessible and user-friendly information about how to use ePortfolios (e.g., how-to-videos and one-on-one assistance). Marketing messages could focus on how quick and easy it is to use ePortfolios so that students are not intimidated by the technology or the time commitment. Marketing messages can also be framed to emphasize the student values reported in this study, such as self-acceptance through reflection and student caring through service-learning activities. Other marketing messages that emphasize study abroad and travel-related experiences outside of the classroom may resonate with additional student values reported in this study: adventure, achievement, dependability, and family or friendship.

Such combined approaches may also resonate with students' reported value of achievement by awarding credentials based on assessed experiential learning activities. For example, as part of the aforementioned QEP, students receive credentials when they are rated by university faculty or staff as proficient in a marketable skill across three separate experiential learning activities. This credentialing strategy simultaneously awards students for working on their ePortfolios every semester and discourages them from waiting until impending graduation to complete ePortfolio work.

Limitations and Future Directions

Limitations of the study sample included having a higher respondent rate for women and freshman, compared to women and freshman enrolled across the entire university from which the study sample was drawn (University of North Texas, 2018). Chi-square goodness of fit tests identified significant differences in gender (χ^2 [1, n = 339] = 72.65, p < .001) and class level (χ^2 [6, n = 339] = 57.06, p < .001) between the two samples. Women comprised 76% of the study sample compared to 53% for the entire university. About 20% of the study sample was composed of freshman, compared to about 10% for the entire university. The current study also had a low overall response rate (5% of total e-mails). These limitations may decrease the generalizability of study results. Generalizability of results for other learning institutions also may be limited because students were asked about their experience with the ePortfolio used at the present study's university. Both qualitative and quantitative results, particularly those related to functionality, will likely differ based on variations among platforms or systems. Additionally, six colleges were represented by fewer than 10 students, so our findings may not be representative of those colleges.

Another limitation is sampling bias. Although an external incentive was offered, the nature of the e-mailed anonymous survey might have been biased towards individuals who felt strongly one way or another about using ePortfolios in general. Further, the data are cross-sectional in nature; future studies could examine the feasibility of increasing students' motivation and confidence ratings across the semesters by engaging students in ePortfolio and experiential learning experiences. The aforementioned QEP may provide such longitudinal evidence as we test this relationship over the next two to three years.

Despite these sampling limitations, the sample's reported ethnicity and age were similar to that of the entire university from which it was drawn (University of North Texas, 2018). A chi-square goodness of fit test for ethnicity, (χ^2 [1, n = 339] = 11.54, p =.073) and a one-sample t test for age ($t_{(338)}$ = -5.09, p = 1.00) did not identify significant differences between the two samples. Therefore, the present findings may assist other large, higher education institutions with similar ethnographic and age characteristics who wish to implement ePortfolios at their own institutions by

providing additional, relative motivational context from the student perspective. To our knowledge, this is the first survey of its kind to report on student perspectives of both motivation and confidence for ePortfolio use, particularly within experiential learning activities and at the university level. Future directions include intentionally targeted marketing strategies that correspond with the values of students as a way to increase motivation and confidence to use ePortfolios. Additional research could also test findings from the present study by assessing students' motivation and confidence to use ePortfolios before and after using the ePortfolio system in their courses, and then examining data across different course samples rather than relying on cross-sectional data interpretation.

References

Association of American Colleges and Universities (AAC&U). (2019). *Value rubrics*. Retrieved from https://www.aacu.org/value-rubrics

Balaban, I., Mu, E., & Divjak, B. (2012). Development of an electronic portfolio system success model: An information systems approach. *Computers & Education, 60*(1), 396-411. doi:10.1016/j.compedu.2012.06.013

Barrett, H. C. (2007). Researching electronic portfolios and learner engagement: The REFLECT initiative. *Journal of Adolescent & Adult Literacy, 50*(6), 436-449. doi:10.1598/JAAL.50.6.2

Batson, T., Coleman, K. S., Chen, H. L., Watson, C. E., Rhodes, T. L., & Harver, A. (2017). *Field guide to ePortfolio*. Washington, DC: Association of American Colleges and Universities.

Beckers, J., Dolmans, D. H. J. M., Knapen, M. M. H., & van Merriënboer, J. J. G. (2018). Walking the tightrope with an e-portfolio: Imbalance between support and autonomy hampers self-directed learning. *Journal of Vocational Education and Training, Advance online publication*, 1-29. doi:10.1080/13636820.2018.1481448

Birks, M., Hartin, P., Woods, C., Emmanuel, E., & Hitchins, M. (2016). Students' perceptions of the use of ePortfolios in nursing and midwifery education. *Nurse Education in Practice, 18*, 46-51. doi:10.1016/j.nepr.2016.03.003

Brown, G., Chen, H., & Gordon, A. (2012). The annual AAEEBL survey at two: Looking back and looking ahead. *International Journal of EPortfolio, 2*(2), 129-138. Retrieved from http://www.theijep.com/pdf/IJEP93.pdf

Bryant, L. H., & Chittum, J. R. (2013). ePortfolio effectiveness: A(n Ill-Fated) search for empirical support. *International Journal of ePortfolio, 3*(2), 189-198. Retrieved from http://www.theijep.com/pdf/IJEP108.pdf

Buchem, I. (2012, July). *Psychological ownership and personal learning environments: Do sense of ownership and control really matter?* Paper presented at the 3rd PLE Conference, Aveiro, Portugal.

Butler, C. C., Rollnick, S., Cohen, D., Bachmann, M., Russell, I., & Stott, N. (1999). Motivational consulting versus brief advice for smokers in general practice: A randomized trial. *British Journal of General Practice, 49*, 611-616.

Buyarski, C. A., Aaron, R. W., Hollingsworth, C. D., Johnson, C. A., Kahn, S. Landis, C. M. Powell, A. A. (2015). Purpose and pedagogy: A conceptual model for an ePortfolio. *Theory Into Practice, 54*, 283-291. doi:10.1080/00405841.2015.1076691

Chang, C. P. (2018). Undergraduate student nurses' functional requirements for e-portfolios: A research study. *Studies in Health Technology and Informatics, 250*, 83-84. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/29857389

Chang, C. P., Lee, T. T., & Mills, M. E. (2016). Clinical nurse preceptors' perception of e-portfolio use for undergraduate students. *Journal of Professional Nursing, 33*(4), 276-281. doi:10.1016/j.profnurs.2016.11.001

Cheng, G., & Chau, J. (2009). Digital video for fostering self-reflection in an ePortfolio environment. *Learning, Media and Technology, 34*(4), 337-350. doi:10.1080/17439880903338614

Chittum, J. R. (2018). The Theory-to-Practice ePortfolio: An assignment to facilitate motivation and higher order thinking. *International Journal of ePortfolio, 8*(1), 27-42. Retrieved from http://www.theijep.com/pdf/IJEP297.pdf

Chye, S. Y., Liau, A. K., & Liu, W. C. (2013). Student teachers' motivation and perceptions of e-portfolio in the context of problem-based learning. *Asia-Pacific Education Researcher, 22*(4), 367-375. doi:10.1007/s40299-012-0022-4

Collins, E., & O'Brien, R. (2018). Highly structured ePortfolio platform for bachelor of nursing students: Lessons learned in implementation. *International Journal of ePortfolio, 8*(1), 43-55. Retrieved from http://www.theijep.com/pdf/IJEP274.pdf

Dahlstrom, E., Walker, J. D., & Dziuban, C. (2013). The ECAR study of undergraduate students and information technology, 2013. Boulder, CO: EDUCAUSE Center for Applied Research. Retrieved from http://www.educause.edu/ecar

Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research, 71*(1), 1-27. doi:10.3102/00346543071001001

Ellis, L., & Kelder, J. (2012). Individualized marks for group work: Embedding an ePortfolio criterion in a

criterion referenced assessment (CRA) rubric for group-work assessment. *Education for Information, 29*, 219-227. doi:10.3233/EFI-130935

Eynon, B., Gambino, L. M., & Török, J. (2014). *Reflection, integration, and ePortfolio pedagogy.* Retrieved from http://c2l.mcnrc.org/pedagogy/ped-analysis/

Gaitán, A. (2012). Understanding students' experiences of e-PDP and the factors that shape their attitudes. *International Journal of ePortfolio*, *2*(1), 29-38. Retrieved from http://www.theijep.com/pdf/IJEP61.pdf

Garrett, N., Thoms, B., Alrushiedat, N., & Ryan, T. (2009). Social ePortfolios as the new course management system. *On the Horizon, 17*(3), 197-207. doi:10.1108/10748120910993222

Gerbic, P., Lewis, L., & Northover, M. (2009). Student perspectives of ePortfolios: A longitudinal study of growth and development. *Proceedings of the ASCILITE Conference, Auckland, New Zealand*, 327-331. Retrieved from http://www.ascilite.org/conferences/auckland09/procs/gerbic.pdf

Glynn, S. M., Aultman, L. P., & Owens, A. M. (2005). Motivation to learn in general education programs. *Journal of General Education, 54*(2), 150-170. doi:10.1353/jge.2005.0021

Gordon, J. A., & Campbell, C. M. (2013). The role of ePortfolios in supporting continuing professional development in practice. *Medical Teacher, 35*, 287-294. doi:10.3109/0142159X.2013.773995

Gordon, L. (2017). Students as co-designers: Peer and instructional resources for novice users of ePortfolio. *International Journal of ePortfolio*, *7*(2), 113-127. Retrieved from http://theijep.com/pdf/IJEP279.pdf

Hains-Wesson, R., Wakeling, L., & Aldred, P. (2014). A university-wide ePortfolio initiative at federation university Australia: Software analysis, test-to-production, and evaluation phases. *International Journal of ePortfolio, 4*(2), 143-156. Retrieved from http://www.theijep.com/pdf/IJEP147.pdf

Hart Research Associates. (2018). *Fulfilling the American dream: Liberal education and the future of work. Selected findings from online surveys of business executives and hiring managers.* Washington, DC: Association of American Colleges and Universities. Retrieved from https://www.aacu.org/sites/default/files/files/LEAP/2018EmployerResearchReport.pdf

Helle, L., Tynjälä, P., Olkinuora, E., & Lonka, K. (2007). "Ain't nothing like the real thing." Motivation and study processes on a work-based project course in information systems design. *British Journal of Educational Psychology, 77*(2), 397-411.

Huang, J., Yang, S., Chiang, P., & Tzeng, L. (2012). Building an e-portfolio learning model: Goal orientation and metacognitive strategies. *Knowledge Management & E-Learning: An International Journal*, *4*(1), 16-36. Retrieved from http://www.kmel-journal.org/ojs/index.php/online-publication/article/viewArticle/163

Ivanova, O. I. (2017). The use of e-portfolio to develop English language learners' autonomy and independence. *Ìnformacìjnì Tehnologì ì Zasobi Navčannâ*, *60*(4), 155-165. Retrieved from https://journal.iitta.gov.ua/index.php/itlt/article/view/1677

Kabilan, M. (2016). Using Facebook as an e-portfolio in enhancing pre-service teachers' professional development. *Australasian Journal of Educational Technology*, *32*(1), 19-31. Retrieved from http://ajet.org.au/index.php/AJET/article/view/2052/1333

Kahn, S. (2014). E-portfolios: A look at where we've been, where we are now, and where we're (possibly) going. *Peer Review, 16*(1), 4-7.

Kehoe, A., & Goudzwaard, M. (2015). ePortfolios, badges, and the whole digital self: How evidence-based learning pedagogies and technologies can support integrative learning and identity development. *Theory Into Practice, 54*, 343-351, doi:10.1080/00405841.2015.1077628

Kirkham, T., Winfield, S., Smallwood, A., Coolin, K., Wood, S., & Searchwell, L. (2009). Introducing live ePortfolios to support self-organized learning. *Educational Technology & Society, 12*(3), 107-114.

Klampfer, A., & Köhler, T. (2015). Learners' and teachers' motivation toward using e-portfolios. An empirical investigation. *International Journal of Continuing Engineering Education and Life-Long Learning*, *25*(2), 189-207. doi:10.1504/IJCEELL.2015.069867

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter.* Washington, DC: Association of American Colleges and Universities.

Lin, Q. (2008). Preservice teachers' learning experiences of constructing e-portfolios online. *Internet and Higher Education, 11*, 194-200. doi:10.1016/j.iheduc.2008.07.002

Love, D., McKean, G., & Gathercoal, P. (2004). Portfolios to webfolios and beyond: Levels of maturation. *Educause Quarterly, 27*(2), 24-37. Retrieved from https://www.learntechlib.org/p/103757/

Maclellan, E. (2008). The significance of motivation in student-centered learning: A reflective case study. *Teaching in Higher Education, 13*(4), 411-421.

Mason, R., & Williams, B. (2016). Using ePortfolio's to assess undergraduate paramedic students: A

proof of concept evaluation. *International Journal of Higher Education*, *5*(3), 146-154. doi:10.5430/ijhe.v5n3p146

McWhorter, R. R., Delello, J. A., Roberts, P. B., Raisor, C. M., & Fowler, D. A. (2013). A cross-case analysis of the use of web-based ePortfolios in higher education. *Journal of Information Technology Education*, *12*, 1-34. Retrieved from http://www.jite.informingscience.org/documents/Vol12/JITEv12IIPp253-286McWhorter1238.pdf

Mihret, D., Abayadeera, N., Watty, K., & McKay, J. (2017). Teaching auditing using cases in an online learning environment: The role of ePortfolio assessment. *Accounting Education*, *26*(4), 335-357. doi:10.1080/09639284.2017.1292466

Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing: Helping people change* (3rd ed.). New York, NY: Guilford Press.

Mobarhan, R., Majidi, M., & Abdul Rahman, A. (2014). Motivation in electronic portfolio usage for higher education institutions. In H. Rahman & R. D. de Sousa (Eds.), *Information systems and technology for organizational agility, intelligence, and resilience* (pp. 224-243). Hershey, PA: Business Science Reference.

Mobarhan, R., Rahman, A. A., & Majidi, M. (2015). Electronic portfolio motivational factors from students' perspective: A qualitative study. *Knowledge Management & E-Learning, 7*(2), 265-279.

Mohamad, S. N. A., Embi, M. A., & Nordin, N. M. (2016). Designing e-portfolio with ARCS motivational design strategies to enhance self-directed learning. *Higher Education Studies*, *6*(4), 138. doi:10.5539/hes.v6n4p138

Morphew, V. N. (2012). *A constructivist approach to the national educational technology standards for teachers.* Eugene, OR: International Society for Technology in Education.

Munday, J. (2017). An embedded ePortfolio in a master's degree: Is it working? *International Journal of ePortfolio*, *7*(2), 175-185. Retrieved from http://theijep.com/pdf/IJEP251.pdf

Munday, J., Rowley, J., & Polly, P. (2017). The use of visual images in building professional self-identities. *International Journal of ePortfolio*, *7*(1), 53-65. Retrieved from http://www.theijep.com/pdf/IJEP238.pdf

National Association of Colleges and Employers. (2018). *Job outlook 2018 spring update*. Bethlehem, PA: NACE International Foundation. Retrieved from https://nace-foundation.org/wp-content/uploads/2018/07/CS947-2018_Foundation_AnnualReport_WEB.pdf

Nguyen, L. T., & Ikeda, M. (2015). The effects of ePortfolio-based learning model on student self-

regulated learning. *Active Learning in Higher Education, 16*(3), 197-209. doi:10.1177/1469787415589532

Painter, S., & Wetzel, K. (2005). School administrators' perceptions of the use of electronic portfolios in K-8 teacher hiring. *Journal of Computing in Teacher Education*, *22*(1), 23-29. Retrieved from https://files.eric.ed.gov/fulltext/EJ876896.pdf

Parker, M., Ndoye, A., & Ritzhaupt, A. D. (2012). Qualitative analysis of student perceptions of E-Portfolios in a teacher education program. *Journal of Digital Learning in Teacher Education*, *28*(3), 99-107. doi:10.1080/21532974.2012.10784687

Rahman, A. A. R. A., & Mohamed, A. H. (2017). Evaluating nursing students' perception toward use of e-portfolio as an innovative learning strategy for student assessment. *American Journal of Nursing Research*, *5*(3), 86-95.

Refaei, B., & Benander, R. (2016). How authors and readers of ePortfolios make collaborative Meaning. *International Journal of ePortfolio*, *6*(2), 71-84. Retrieved from http://www.theijep.com/pdf/IJEP244.pdf

Roberts, P. (2018). Developing reflection through an ePortfolio-based learning environment: design principles for further implementation. *Technology, Pedagogy and Education*, *27*(3), 313-326. doi:10.1080/1475939X.2018.1447989

Rowley, J., & Munday, J. (2014). A "sense of self" through reflective thinking in ePortfolios. *International Journal of Humanities Social Sciences and Education*, *1*(7), 78-85. Retrieved from https://www.arcjournals.org/pdfs/ijhsse/v1-i7/9.pdf

Ryan, J. A. (2018). Which resources are most helpful to support development of an ePortfolio? *British Journal of Nursing*, *27*(5), 266-271. doi:10.12968/bjon.2018.27.5.266

Sidebotham, M., Baird, K., Walters, C., & Gamble, J. (2018). Preparing student midwives for professional practice: Evaluation of a student e-portfolio assessment item. *Nurse Education in Practice*, *32*, 84-89. doi:10.1016/j.nepr.2018.07.008

Snoeyink, R., & Meyer, J. (2007). Shaping teacher candidates' digital portfolios: What administrators want for hiring. *Journal of Computing in Teacher Education*, *23*(3), 89-96. doi:10.1080/10402454.2007.10784567

Svinicki, M. D., & McKeachie, W. J. (2014). *McKeachie's teaching tips: Strategies, research, and theory for college and university teachers* (14th ed.). Belmont, CA: Wadsworth Cengage Learning.

Toner, A., & McDowall, K. J. (2018). ePortfolio for mental health students: Evaluation of a paper

exercise. *British Journal of Mental Health*, *7*(1). doi:10.12968/bjmh.2018.7.1.33

Tosh, D., Light, T., Fleming, K., Haywood, J., & Haywood, J. (2005). Engagement with electronic portfolios: Challenges from the student perspective. *Canadian Journal of Learning and Technology, 31*(3). Retrieved from https://www.learntechlib.org/p/43170/

Tuksinvarajarn, A., & Todd, R. W. (2009). The e-pet: Enhancing motivation in e-portfolios. *English Teaching Forum, 47*(1), 22-25.

Tzeng, J.-Y., & Chen, S.-H. (2012). College students' intentions to use e-portfolios: From the perspectives of career-commitment status and weblog-publication behaviours: E-portfolio and career commitment. *British Journal of Educational Technology*, *43*(1), 163-176. doi:10.1111/j.1467-8535.2010.01165.x

University of North Texas. (2018). *UNT fact book*. Retrieved from https://institutionalresearch.unt.edu/fact-book/enrollment

Vachon, B., Foucault, M.-L., Giguère, C.-É., Rochette, A., Thomas, A., & Morel, M. (2017). Factors influencing acceptability and perceived impacts of a mandatory ePortfolio implemented by an occupational therapy regulatory organization. *Journal of Continuing Education in the Health Professions, 38*(1), 25-31. doi:10.1097/CEH.0000000000000182

van Wyk, M. M. (2017). Student teachers' views regarding the usefulness of reflective journal writing as an ePortfolio alternative assessment strategy: An interpretive phenomenological analysis. *Gender and Behaviour, 15*(4), 10208-10219.

Volmer, D., & Sarv, A. (2018). E-portfolio as an effective tool for self-directed and reflective learning in social pharmacy. *Research in Social and Administrative Pharmacy*, *14*(8), e43-e44. doi:10.1016/j.sapharm.2018.05.084

von Konsky, B., & Oliver, B. (2012). The iPortfolio: Measuring uptake and effective use of an institutional electronic portfolio in higher education. *Australasian Journal of Educational Technology*, *28*(1), 67-90. Retrieved from http://ajet.org.au/index.php/AJET/article/view/884/162

Wakeling, L., Aldred, P., & Hains-Wesson, R. (2018). ePortfolios and reflective practice for food science students. *Journal of Food Science Education*, *17*(2), 52-59. doi:10.1111/1541-4329.12137

Watson, C. E., Kuh, G. D., Rhodes, T., Light, T. P., and Chen, H. L. (2016). Editorial: ePortfolios: The eleventh high-impact practice. *International Journal of ePortfolio, 6*(2), 65-69. http://www.theijep.com/pdf/IJEP254.pdf

Weber, K., & Myrick, K. (2018). Reflecting on reflecting: Summer undergraduate research students' experiences in developing electronic portfolios, a meta-high impact practice. *International Journal of ePortfolio*, *8*(1), 13-25. Retrieved from http://www.theijep.com/pdf/IJEP287.pdf

Yancey, K. (2015). Grading ePortfolios: Tracing two approaches, their advantages, and their disadvantages. *Theory Into Practice, 54*, 301-308. doi:10.1080/00405851.2015.1076693

Yu, T. (2011). E-portfolio, a valuable job search tool for college students. *Campus-Wide Information Systems*, *29*(1), 70-76. doi:10.1108/10650741211192064

MEGAN DOUGLAS, MS, is a doctoral candidate in Clinical Health Psychology at the University of North Texas. She is currently completing her pre-doctoral clinical psychology internship at the Department of Veterans Affairs Connecticut Healthcare System in West Haven, CT. Prior to this, she was a graduate research assistant for Career Connect as part of the University's QEP. Her QEP work focused on facilitating student reflections through a university's ePortfolio system.

SCOTT PEECKSEN holds his PhD from the University of Arizona and is an Outcomes Assessment Specialist for the Career Connect department at the University of North Texas. He manages the assessment of the university's QEP and the evaluation research conducted as a result of QEP data collection. He has more than 15 years of research and evaluation experience encompassing study design, data collection, analysis, and reporting. He is well versed in descriptive and inferential analysis methods and group-comparison designs, and is a What Works Clearinghouse reviewer for the U.S. Department of Education.

JORDAN ROGERS, MS, is a graduate research assistant for the department of Career Connect at the University of North Texas. She is a licensed professional counselor pursuing her doctorate in counseling where she supervises and teaches at the University. Much of her work at Career Connect focuses on student-centered initiatives to foster reflection and deeper learning.

MIKE SIMMONS holds his PhD from the University of Texas at Arlington and is the Assistant Vice President of Academic Affairs at the University of North Texas, leading the Career Connect department and other academic and technology innovation projects. He was previously the Assistant Vice President for Lifelong Learning at Texas Woman's University where he was responsible for online education, faculty support, and continuing education.

Constructing a Professional Identity: Connecting College and Career Through ePortfolios

Leslie Cordie, Jamie Sailors, Becky Barlow, and John S. Kush
Auburn University

In this paper, we describe the use of ePortfolios at a public, land-grant university and document how the ePortfolio has been used to develop more authentic learning experiences. We discuss the best practices for ePortfolios and its varied use as a teaching and learning tool. In addition, we discuss the challenges of implementing ePortfolios. For these examples, we provide strategies for helping both undergraduate and graduate students communicate how their academic experiences connect with the expectations of employers. All of these efforts are directed through an online, outward-facing ePortfolio by providing examples of relevant, professional experiences, combined with reflective writing (i.e., authentic learning). Students who identify the narrative themes running through their experiences, and use those themes to develop an online presence, are able to reflect, construct, and articulate a professional identity through the ePortfolio. Students then can answer the critical question posed by employers, "Tell me about yourself."

"Tell me about yourself" is one of the most common first questions in a job interview, especially for those who are new college graduates. When potential employers ask this question, it generally means, "Give me an overview of who you are, professionally speaking." In the modern employment environment, being able to direct the interviewer to an efficiently curated, online resume as part of the answer can mean the difference between the short or long resume stack. An ePortfolio provides a highly successful approach to creating such a professional presence, and thereby higher selection potential for an employment interview.

For college graduates, ePortfolios have proven to be effective vehicles when used to showcase higher education experiences and skills to outside audiences. In doing so, they provide a professional presence for the new graduate who is seeking not only a job, but also a career (Cambridge, 2010). As an interdisciplinary teaching tool, the ePortfolio has become increasingly popular in the postsecondary environment, providing the learner with an outlet to present a comprehensive picture of their learning experiences. Basken (2008) noted ePortfolios "are a way to generate learning as well as document learning" (p. A30).

A critical task for university students is making connections between their academic experience and their professional goals, especially when communicating their career readiness to potential employers (Zubizarreta, 2009). An ePortfolio can unite the learner's experiences and display a professional, online identity to the employer. In addition to allowing the learner to demonstrate who they are to the professional world, utilizing ePortfolios in higher education challenges educators to provide more authentic learning experiences by connecting learning experiences to actual career goals (Reese & Levy, 2009).

In this paper, we describe how three differing programs at a public, land-grant institution are using ePortfolios in an effort to better prepare students for the global workplace. These programs are the Department of Human Development and Family Studies, the School of Forestry and Wildlife Sciences, and the College of Education and the Adult Education degree program. We discuss the best practices for ePortfolios and its varied use as a teaching and learning tool from these three different colleges within the university. In addition, we discuss the challenges of implementing ePortfolios. For these examples, we provide strategies for helping both undergraduate and graduate students communicate how their academic experiences connect with the expectations of employers and job readiness. All of these efforts have resulted in authentic learning, showcased in an online, outward-facing ePortfolio with examples of relevant, professional experiences, combined with reflective writing.

We believe the frameworks of professional identity (Meizrow, 2000; Wenger, 1998), lifelong learning (Cambridge, 2010; Knowles, 1984), and constructivism (Bruner, 1966; Vygotsky, 1980), should guide the use of ePortfolio in the postsecondary learning environment. These frameworks influence the development and structure of the learner's creation of an ePortfolio. We propose that learning happens, most effectively, when students construct systems of knowledge for themselves, rather than simply having information presented to them (see Figure 1).

Cases on Integrating ePortfolio into Higher Education Curriculum

In the following sections, we describe how three separate programs utilize ePortfolios in the higher education curriculum in an effort to better prepare students for the actual workplace. These programs are the Department of Human Development and Family Studies (HDFS), the School of Forestry and Wildlife

Figure 1
Constructing the ePortfolio in the Learning Environment
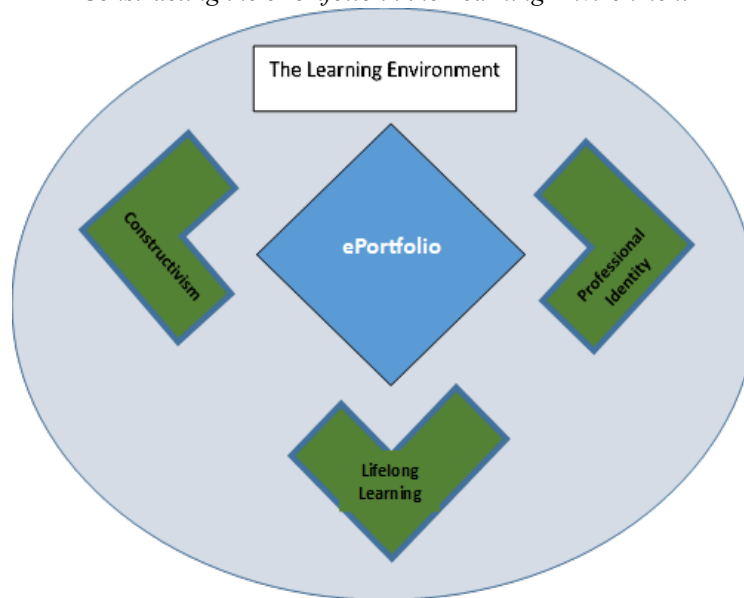
Note. Professional Identity = Combining development and learning theories, professional identity can be described as how we perceive ourselves, occupation, and career, along with explaining this "self" to others (Meizrow, 2000; Wenger, 1998). Lifelong Learning = Although there is no single theory for lifelong learning or adult education, the concept of andragogy by Knowles (1984) provided clear assumptions for adults engaged in the learning process; Knowles (1984) defined andragogy "as the art and science of helping adults learn" (p. 12). Constructivism = A learning theory that proposes people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences (Bruner, 1966).

Sciences (SFWS), and the College of Education, the Adult Education degree program (ADED).

Undergraduate Professional Identity Development in HDFS

The first case we present highlights ePortfolio and student learning in HDFS. The overarching goal for HDFS is to prepare undergraduates for successful entry into the job market or graduate school, depending upon each student's career goal. A common challenge faced by most undergraduates, however, is creating a personal narrative that effectively connects their academic experiences with their post-graduation goals (Graves & Epstein, 2011). Without an effective personal narrative, students are limited in their ability to communicate with a professional audience their preparedness for assuming the responsibilities of the position they desire to obtain. The discrepancy between the learning provided for students, and their ability to make connections between their experiences and goals, led HDFS to adopt the ePortfolio as a tool for guiding students' professional development.

Rather than an ePortfolio based on a single course or an assessment, HDFS emphasizes the broader concept of a Professional ePortfolio, an ePortfolio designed to demonstrate achievement in a wide range of

learning outcomes and readiness for the job market. The Professional ePortfolio is a living website that displays a student's skills or experiences through the presentation of artifacts (i.e., specific examples of learning and/or experiences), and through reflective statements that communicate to an audience outside of the university how the artifacts support professional goals. Through the selection of artifacts and the writing of reflective statements, students begin to solidify their professional narratives and understand the relevance of learning to their professional goals (Cambridge, 2010; Graves & Epstein, 2011). Yet, students need assistance in the process of developing this narrative (Eynon, Gambino, & Török, 2014; Miller & Morgaine, 2009). Even though students may identify relevant artifacts, they do not automatically see the connection between various artifacts or between the artifacts and their professional goals. To assist them in making these connections, HDFS has established various points across the curriculum to promote student ePortfolio development and support identity construction (Light, Chen, & Ittelson, 2012).

Developing the ePortfolio across the HDFS curriculum provides students with multiple opportunities to consider their professional growth, refine their career goals, and reflect on the connection

between the two (Cambridge, 2010). Under the HDFS model, students create a beginning ePortfolio in a sophomore-level professional development class. Instruction on developing the ePortfolio and constructive feedback from the course instructor during the semester are provided. In addition, during the HDFS professional development course, students explore potential career directions and requirements for positions, which assists them in better understanding the professional audience they will target with their ePortfolio (Light et al., 2012).

At the end of a senior capstone course, HDFS students are required to submit a final ePortfolio, concluding their full college experience. During the senior capstone course, assignments provide direction on connecting experiences with professional goals and, again, students are provided constructive feedback, ensuring relevance and readiness to the job market (Light et al., 2012). During the sophomore and senior semesters, additional ePortfolio workshops are offered, and students can meet with faculty to receive guidance to refine their ePortfolios. Expectations for the ePortfolio, direction for selecting artifacts and writing reflection, as well as other ePortfolio-specific resources also shared with HDFS majors through an ePortfolio website (see http://www.humsci.auburn.edu/hdfs/ugrad-eport.php). Furthermore, students complete ePortfolio-specific assignments in multiple HDFS undergraduate courses, which ask them to consider how their classroom learning relates to their professional goals, as a best practices teaching strategy (Light et al., 2012).

In the HDFS model, students in various courses consider the skills and qualities necessary to become a professional in the workplace. There are three key expectations, emphasized at all stages of ePortfolio development, which facilitate students' creation of their personal narrative and ability to make connections between their experiences and professional goals (Peet et al., 2011). First, they are expected to create an "About Me" page as part of their ePortfolio development. On this page, students present themselves and answer the typical interview question, "Tell me about yourself." Students are instructed to emphasize their professional qualities and skills, and clearly identify their professional goals on this main page. Each subsequent page in their ePortfolio then presents a collection of artifacts related to their job skills. On each of these ePortfolio pages, students are expected to write an introductory paragraph that explains the connection between the artifacts and their overall relationship to the student's professional goal. For example, a student may explain that the research experience presented on the page led her or him to understand the developmental needs of young children. Finally, students are required to provide a brief reflective statement for each individual artifact to detail the

learning experiences (Zubizarreta, 2009). A student who volunteered in a preschool classroom, for example, might reflect on how the experience taught him or her to form supportive relationships with children and utilize different methods of classroom management.

Through consistent development and revision of the ePortfolio across the HDFS curriculum, students develop a narrative about who they are as a professional and become ready to enter the job market (Brandes & Boskic, 2008; Eynon et al., 2014; Miller & Morgaine, 2009). Continuous editing allows the student to demonstrate a mature understanding of the connections between their learning and their career goals (Zubizarreta, 2009). Through multiple ePortfolio-related assignments, constructive feedback, and reworking of their ePortfolio, students solidify their professional identity and are better prepared to communicate their credentials for a professional position to employers (Brandes & Boskic, 2008). The ePortfolio not only provides students with a modern, online presence, it also prepares students to be more successful in face-to-face interviews (Graves & Epstein, 2011). The best practice strategies of continuous editing and feedback, implementation of a variety of ePortfolio assignments across the curriculum, and the creation of a personal narrative through the selection of artifacts and reflective writing, all contribute to the student's development as a ready professional.

HDFS believes that the Professional ePortfolio is foundational in supporting our goals for undergraduates toward completion of the program and success in the marketplace. The data collected over the past six years of integrating the ePortfolio into our undergraduate curriculum indicates that 80% of our students view it as an effective tool to demonstrate their preparedness to a professional audience prior to graduation. In the future, employer demand for the ePortfolio product will be researched by HDFS in order to effectively integrate marketplace needs with the undergraduate curriculum.

SFWS Utilization of ePortfolio for Career Employment

In this section of the paper, we highlight two cases of ePortfolio in the School of Forestry and Wildlife Sciences (SFWS), where soft skills in the profession have only recently been emphasized as important learning outcomes. In the early 1900's, schools of Forestry focused primarily on teaching technical land management skills (Chapman, 1935). Less than 20 years later, though, it was determined that skills such as writing and public speaking were also needed by students in the natural resource disciplines (Barrett, 1953). Today, careers in forestry and wildlife and natural resource management continue to have an emphasis on working with nature in a sustainable way for the benefit of society. However, studies have shown

that employers perceive that students who graduate from natural resource programs tend to lack "soft skills" such as communication, leadership, and problem solving (Crawford, Lang, Fink, Dalton, & Fielitz, 2011; Robinson & Garton, 2008; Sample, Block, Ringgold, & Giltmier, 1999; Stauffer & McMullin, 2009). In addition, the employment field in the disciplines of forestry, wildlife and natural resources can be highly competitive. Job openings each year are often limited, and predictions for job growth in these professions is expected to be only average (5-8% increases), to slower than average (3-7%) over the next 10 years (Bureau of Labor Statistics, 2017). This shortage in jobs makes it essential for students in the discipline to set themselves apart and be ready to enter the professional job market as competitive players with a variety of skills.

Constructivism and ePortfolio Development in the SFWS

When applying for jobs, SFWS students find themselves competing with others from all across the southeastern United States to fill only a handful of positions. Similar to results seen in prior studies (Crawford et al., 2011; Robinson & Garton, 2008; Sample et al., 1999; Stauffer & McMullin, 2009), potential employers expressed disappointment in recent years, as SFWS students seemed poorly prepared for job interviews. Students had the "boots on the ground" knowledge yet lacked the polish and professionalism employers expected. The use of ePortfolios to develop the students' professional identity had the potential to address these employer concerns, and set students apart from their peers by connecting their learning experiences and career goals through creating an online, professional presence (Basken, 2008; Brandes & Boskic, 2008; Graves & Epstein, 2011). Prior to the university-wide employment of ePortfolio, though, relatively few SFWS students, faculty, or potential natural resource employers were familiar with ePortfolios and their benefits. This created a gap in knowledge and a need for faculty development related to best practices in utilizing ePortfolios for learning in the SFWS.

In an effort to address this knowledge gap on ePortfolio, a two-fold SWFS project was initiated. First, we sought to increase the awareness of both the ePortfolio and the ePortfolio Project among student and faculty in SFWS, in addition to increasing the awareness to the potential employers for SFWS students. Second, we wanted to determine if ePortfolios could be used to help SFWS students improve skills such as communication, technical competency, visual literacy, and critical thinking through reflection as shown in the literature (Basken, 2008; Graves & Epstein, 2011; Zubizarreta, 2009).

ePortfolio awareness survey. The initial step to increase ePortfolio awareness within the SFWS was initiating face-to-face conversations with twenty-seven potential employers at a SFWS career day in the fall of 2016. As part of the discussions at this event, we explained what ePortfolios were and showed potential employers examples of ePortfolios. These potential employers were also asked for input about how ePortfolios might be beneficial to their hiring process in order to probe for relevancy (Reese & Levy, 2009).

The data collected at the career event showed that 97% of employers interviewed stated that ePortfolios would be beneficial for both students and potential employers. These potential employers acknowledged the benefits of having an online platform to view resumes or other projects or assignments that helped them understand students' learning experiences. Employers were encouraged by what they saw in the examples presented to them, as many felt an ePortfolio could give them better insight into the credentials of potential employees.

ePortfolio workshops. In October 2016 and again in February 2017, we conducted a four-week ePortfolio workshop for students. Workshops were open to all undergraduate and graduate students in the SFWS. Participation in these workshops was voluntary, but extra credit was given in some forestry and natural resource courses if students took part in all four weeks of the course. These workshops provided information on: (a) what an ePortfolio is; (b) reflective writing exercises, including writing a personal mission statement; (c) targeting an audience; (d) collecting artifacts and ethical literacy; and (e) developing an ePortfolio using Wix or a similar online platform. The information to develop the workshops was based on collaboration with the Office of University Writing and the university-wide initiative on ePortfolio (see http://wp.auburn.edu/writing/eportfolio-project/).

In the first week of the workshops, we introduced the ePortfolio concept and discussed ways it could benefit students in their job searches. We also guided the students through thinking about experiences they would want to tell a potential employer about during an interview and instruction on writing a personal mission statement. For homework, students then completed their personal mission statement, which included reviewing the websites of companies or agencies at potential employers. Based on that research, students noted website wording and phrasing, and images and colors used by the employer. This information was brought to the following week's workshop session.

The second week of the workshop focused on refining students' pages for their personal ePortfolios and understanding the idea of ethical literacy. Using their experiences and the knowledge learned from looking at potential employer websites, most students

decided to create four main pages for their ePortfolios. These pages included: (a) an "About Me" page, which served as the ePortfolio homepage and included the student's mission statement, with a current resume; (b) a page that highlighted relevant coursework; (c) a page that highlighted work experiences; and (d) a page with contact information. Some students also included information on scholarships or field-based experiences. During this class, students started writing short descriptions that could accompany each of these pages to provide relevancy to the employer audience.

At the end of this workshop session, the concept of ethical literacy was discussed at length, helping students understand the critical thinking skills needed when writing or presenting information in a way that is moral and respectful of others' viewpoints (Light et al., 2012). Because natural resource management topics can be uncomfortable to some readers (i.e., cutting down trees or wildlife taxidermy), students were coached on thoughtful image selection and how to provide context for images used in a professional ePortfolio (Graves & Epstein, 2011; Light et al., 2012). For example, some wildlife studies require the use of radio collars or other devices that might appear strange or cruel to those outside the discipline. Similarly, timber-harvesting equipment can seem large and destructive to the general public. As a best practice, instruction on ethical literacy was provided to students. For example, students were coached about how to provide context for images of valuable educational experiences, in order to provide relevancy and appeal to a variety of audiences (Reese & Levy, 2009). During this instructional session, instructors also discussed the importance of using high quality, professional images of themselves on their About Me pages. Students often initially selected pictures of themselves in casual or social settings (e.g., football games, formals, friends' weddings) because they thought they "looked good." However, these images of students rarely showed professional attire and sometimes included behaviors not appropriate in a work environment (e.g., holding a beer or red solo cup, indicating alcoholic beverages). As homework for the class, students collected artifacts (e.g., papers, projects, images) that could be used on their ePortfolio site, including a professional looking image of themselves. All of these activities scaffolded learning about ethical literacy.

During the third week, students were introduced to various ePortfolio platforms. This class was conducted in the SFWS computer lab so various platforms could be displayed and actively demonstrated to the students. Then, students could select the platform that was best suited to their individual needs. Additional time during the session was given to the students to begin populating their ePortfolios, utilizing the reflective writing and artifacts developed in the previous weeks. Instructors provided guidance and helped trouble-shoot any

technical issues in the session. Additionally, as a best practice, students were encouraged to collaborate and share their experiences or frustrations with one another.

The final week of the workshop was also conducted in the computer lab so students could continue to work on their ePortfolios with assistance from instructors. Many students had final versions of their ePortfolios or near final versions by the end of this session.

The first student workshop in October 2016 had 41 students. Twenty students completed an ePortfolio by the end of the course. Twenty-four students participated in the February 2017 training, with 20 students completing a working ePortfolio by the end of the workshop. Training materials used in these workshops will be available for use annually for each new class cohort in SWFS as a way to provide instructional continuity and to build a faculty development resource. During the four workshops, students were most engaged in reflective writing and personal mission statements. At the start of the first workshop, almost every student felt they had nothing to write about that would interest a potential employer, yet all had developed career mission statements by the end of the sessions.

Our research into the published literature on ePortfolios found very few articles coming from more science-based curriculums. We hope our experiences will encourage others in similar disciplines to utilize ePortfolios, add to the ePortfolio literature, and build best practices for wildlife disciplines and other science faculty. We plan to continue our integration and development of ePortfolio in the SFWS with additional workshops in coming semesters.

SFWS Integration of ePortfolio in an Online Graduate Certificate Program

Online, graduate certificate programs are growing in popularity in the professional marketplace (Johnson et al., 2016). As the future of natural resource programs and careers are uncertain in the current political climate, graduate certificate programs provide an opportunity for professionals to obtain additional skills that set them apart from their peers and augment career options. Online certificate programs also give professionals the opportunity to expand their educations without having to leave their current jobs or spend time and money on full graduate degrees (Johnson et al., 2016). Studies have shown that ePortfolios can be very useful to participants in online certificate programs because the structure of these programs naturally lends itself to the development of artifacts that demonstrate technical expertise and theoretical knowledge that can then be highlighted in an ePortfolio (Bolliger & Shepard, 2010; Richardson, Watkins, & Field, 2012).

Program assessment and review are supported by ePortfolios, as they are well-suited to goal setting for

student achievement, measuring those achievements, and reviewing that information for program improvement (Crowell & Calamidas, 2016; Lowenthal, White, & Cooley, 2011). Many universities now include ePortfolio development as part of capstone courses in a graduate certificate program (Cambridge, 2010). As the market for certificate credentials has grown, SFWS has looked to enhance its curriculum to meet the needs of employers with both ePortfolios and credentialing (Carnevale, Rose, & Hanson, 2013).

We have developed an online graduate certificate program in Restoration Ecology within SFWS to expand the programs and reach to the employer marketplace. Restoration ecology is defined as the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed (Society for Ecological Restoration, 2018). The Restoration Ecology Certificate program was developed because several on-going, substantial restoration projects have been created in the southeastern United States, with many involving endangered species that inhabit southeastern ecosystems (Robles, Flather, Stein, Nelson, & Cutko. 2008; Van Lear, Carroll, Kapeluck, & Johnson, 2005). Businesses, as employers, see value in working to protect threatened and endangered species, in restoring native species to sites they had been extirpated from, and in mitigation banking. BenDor, Lester, Livengood, Davis, and Yonavjak (2015) reported that the restoration economy provided more jobs than mining, logging, or steel production in total. As a $9.5 billion industry employing about 126,000 people directly, indirectly generating $15 billion in revenue, and over 95,000 jobs, the restoration industry's total economic output value was nearly $25 billion (BenDor et al., 2015).

With this background on the growing restoration economy, the decision to expand on the ePortfolio workshops with SFSW undergraduates was made to transfer the professional knowledge to a graduate certificate program. Online certificate programs naturally lend themselves to the development of artifacts that demonstrate technical expertise and theoretical knowledge (Ruey, 2010). However, could students in online certificate programs create ePortfolios to document and synthesize what they have learned, and present it in a way that positions them to pursue new professional opportunities? How well would the face-to-face workshop materials transition into an online class format? We explored the best practices of moving this information to an online format and discuss the results below.

ePortfolio assignment. To start the development process, information presented in face-to-face ePortfolio workshops was used to develop the initial course modules and rubrics for an online certificate program. Course modules and curriculum were created to guide students through the construction of an ePortfolio,

emphasizing how to highlight what they learned, and position themselves and their artifacts in the area of restoration ecology. Upon completion of the certificate program, students were expected to demonstrate the following in their ePortfolios: (a) advanced knowledge in the area of restoration ecology, (b) the ability to review and synthesize scientific literature and use that resulting knowledge to make decisions with regard to natural resource restoration, (c) potential preparation for additional graduate study, and (d) the ability to communicate scholarly information to professional and general public audiences. All of these objectives relate to best practices in higher education curriculum.

The first assignment for the semester was, "Tell me about yourself." We used this phrase and an icebreaker activity in the online discussion board to learn about each student and help provide direction for the class semester. The activity helped us to understand where the adult learner was in terms of background and their experiences. This helped us to focus and present relevant information (Knowles, 1984). The online discussion revealed that no student in the first two semesters of the program had completed an ePortfolio. Therefore, during the semester, the students viewed two online presentations on the key elements of ePortfolios to mimic the face-to-face workshops (Light et al., 2012). Assignments to work on technical competency, visual literacy, thinking through reflection, and developing skills for the ePortfolio were also created in the course. Following best practices, we scaffolded student learning on critical components of ePortfolio by spreading out the learning over several weeks (Vygotsky, 1980; Brandes & Boskic, 2008).

The final project for the course was the development of an ePortfolio. Projects were individualized as much as possible in an effort to focus on students' professional goals and/or careers in order to make them relevant to the adult learner (Cambridge, 2010; Knowles, 1984). The SWFS online certificate program has adult students from a broad range of backgrounds, experiences, and workplaces. Many students are in the certificate program as a means to gain better employment or move into a supervisory role in their workplaces. Students currently enrolled at the university are also using the program for graduate hours towards their Master's or PhD in wildlife or other sciences.

One major concern in the program is exposure to the online ePortfolio platforms and a potential lack of technology skills. A major difference on the basic knowledge of the web environment was observed between students at the university versus those from other degree programs or those in rural locations in the certificate program. The university students had little to no issues working on the ePortfolio project or with online media and tools. Other student groups, such as older, more non-traditional learners, who had not been

exposed to ePortfolios in the past, had more difficulties. For example, those who had limited access to the internet or lacked computer literacy struggled more with the ePortfolio technical development. In the future, the program hopes to develop or find more resources to support the use of ePortfolios in the online curriculum to assist nontraditional students and remote learners.

Although no data were collected, students in the certificate program for upward mobility took the ePortfolio assignments very seriously. Those students working on a degree described the value and relevance of the ePortfolio assignment, as it had them critically reflect on their career path. Additionally, it helped some students develop materials that could be provided to potential employers or as part of an application for a graduate degree program. Despite some minor issues related to curriculum improvement, we will continue to pursue the use of ePortfolios in the online course in restoration ecology. The feedback from students has been 100% positive about the structure for the classes and how we try to guide them through the reflective process of creating an ePortfolio and professional identity.

ADED and the Online Professional Presence of the ADED

The third and final ePortfolio example is from ADED, an interdisciplinary degree program in the College of Education. As the discipline stresses authentic teaching and learning experiences, ePortfolio seemed to be a natural model for the learning environment. Adult education is a broad, interdisciplinary field and attracts an equally wide variety of working professionals. Fundamentally, there is a strong need to provide a cohesive, professional image after completion of the adult education degree or credential (Cervero & Daley, 2016). The use of ePortfolio in the program allows the student to provide an online professional identity in the global marketplace, in the hopes of gaining employment as an adult educator in a variety of disciplines and career fields.

The use of ePortfolio in the ADED program was first established by its faculty joining the university's ePortfolio Cohort Program. This program was created by the Office of University Writing to help faculty and staff implement ePortfolios into student assignments. ADED was the first cohort in the College of Education (in 2014) to adopt ePortfolio by including it in the graduate curriculum. The first course to adopt ePortfolio was the Internship course, as a way to develop an online professional presence. Now, several years into the process, the ePortfolio is effectively part of five courses in the ADED program. Our Workforce Education course is the main anchor for ePortfolio in the program, as career development and training in the field are the main focus of the curriculum. In the workforce course, students are asked to develop

ePortfolios for future employment as one of the main course assignments.

As a general teaching strategy and best practice, students are provided with the idea of a template or the main components for developing an ePortfolio (Light et al., 2012). Students usually start the ePortfolio with four main pages: (a) a welcome page, (b) an about me page, (c) an experience or sample artifact page, and (d) a contact page. This strategy was recommended by the HDFS faculty as a best practice, and has remained a core concept for ePortfolio instruction by the ADED faculty. Students in the ADED courses are encouraged to use the resources provided at the ePortfolio university website before they start developing an ePortfolio (see http://wp.auburn.edu/writing/eportfolio-project/student-resources/).

As most of the ADED students are not familiar with web technologies, the ePortfolio allows for initial development of online curriculum materials and development of 21st century technology skills. Students are encouraged to use the template designs provided by free platforms in order to minimize cost. These platforms also have robust tutorials, resources, and designs that help provide an online professional presence to the world that goes beyond other familiar social media such as LinkedIn or Twitter (Chen & Bryer, 2012).

In addition to the ePortfolio Cohort and curriculum integration as a best practice, a faculty member created her own ePortfolio to be a role model to students (see https://aub.ie/LeslieCordie; Peet et al., 2011). As the students began to develop ePortfolios in courses, student examples were added to the course as additional resources and for discussion in the course. These student examples provide peer learning and highlight the relevance of ePortfolio in the adult education field.

One visible outcome from the integration of ePortfolio in the ADED curriculum has been the transfer of knowledge into other college curriculum. Specifically, an ADED graduate student who created an ePortfolio in a workforce course is also the director of an online business degree program at the university. The student saw immediate relevance for ePortfolios in the business program for their students, and as such, ePortfolios were integrated into the graduate business curriculum – the first in the College of Business to adopt ePortfolio. Another highlight of ePortfolio use in the ADED program was when one of the most technologically-challenged students developed a professional ePortfolio and was subsequently nominated for the university's ePortfolio student award, becoming one of the top three finalists that year.

Peer review. A crucial aspect of the ePortfolio in the ADED courses is the process of peer review for ePortfolios. As both a best practice and instructional strategy, the use of peer review fits nicely within the philosophy of *andragogy*,

which is adults wanting learning to be immediately relevant (Knowles, 1984). As the ADED students develop their ePortfolios, they learn how to use the technologies and to reflect on their experiences by selecting artifacts. When students have completed the ePortfolio assignment, they are required to showcase their skills to at least two other graduate students and receive constructive feedback on their ePortfolios, utilizing the university's ePortfolio Rubric (see http://wp.auburn.edu/writing/wp-content/uploads/20150806ePortfolioRubric.pdf). The peer feedback experience allows for discussion, peer-to-peer learning, and helps make connections to learning experiences and professional goals. It also develops constructive feedback skills, which are crucial communication skills in today's workplace (Robles, 2012). Lastly, the ePortfolio assignment is the culminating discussion in the Workforce Education course, providing a natural capstone to the semester by synthesizing the core concepts relevant to professional development and continuous adult learning throughout a career. Students should be able to articulate, "Tell me about yourself" by the completing the ePortfolio assignment.

In the ADED courses, students have indicated positive comments about their experiences, both in the face-to-face and online courses. These comments are documented in both the course evaluations and the online discussion comments. Future plans include: gathering the discussion data as evidence of the value of ePortfolio in the ADED program, and utilizing ePortfolio as part of the summative assessment for both students and the program.

Summary

In this paper, we described the use of ePortfolios by three different programs at a public, land-grant university and document how the ePortfolio has been used to develop more authentic learning experiences. Using the frameworks of professional identity, lifelong learning, and constructivism, we described four specific ePortfolio curriculum initiatives, along with challenges, strategies for integration, and overall best practices. All of the case efforts are directed by developing an online, professional identity through the curriculum.

Best practice ePortfolio work requires support across time as authentic learning requires intense revision and reflection by the student. In addition, each of the programs provided multiple opportunities to experience the development and application of ePortfolio (e.g., workshops, course assignments, and peer-revision). All of these curricular activities scaffolded student learning experiences to develop their professional identities as a best practice (Vygotsky, 1980). Effective ePortfolio work was also based on a consideration of the audience, such as employers, which shaped reflections to clearly communicate how
learning supports professional practice and readiness for the workplace.

Other key best practices or common themes provided by the three case studies include the following items:

- Reflective writing assignments that help students comprehend how their classroom learning and field experiences support their preparedness for accomplishing professional goals and improve their ability to communicate to a professional audience;
- Personal mission statements, About Me pages, and Tell Me About Yourself assignments that help students formulate their professional goals and construct a personal narrative that synthesizes into a professional identity;
- Personalized ePortfolios that are specific to students' goals and experiences while providing guidance and practice on the process (artifacts, reflective writing, use of technology) rather than the exact content; and lastly,
- Scaffolded use of technology to create the ePortfolio, meeting the needs of the adult learner.

HDFS, SFWS, and ADED are using ePortfolios at various stages and courses in their programs. All three programs, though, identified the need for students to be prepared to communicate their readiness for a career following the completion of an academic program. In higher education classrooms and beyond, the ePortfolio is a valuable tool for constructing a professional identity and for communicating how academic learning and experiences have prepared students from various disciplines for assuming the responsibilities of their prospective careers. All three programs found the ePortfolio is valuable for students and attractive to potential employers.

Work done by HDFS helped to guide the ADED program in the development and use of ePortfolio. In addition, HDFS and ADED faculty assisted SFWS in their implementation of ePortfolios on campus, as well as in their development of an online certificate program. Collaboration with faculty between the programs provided the guidance SFWS needed when their search of the published literature on ePortfolios found very few articles coming from more science-based curriculums. SFWS hopes our experiences will encourage others in similar disciplines to utilize ePortfolios, add to the ePortfolio literature, and build best practices for forestry and wildlife disciplines and other science faculty in other academic institutions and faculty development programs.

We support the debate that ePortfolios have been most successful when they provide an authentic learning experience, and are seen as relevant to

professional identity development for the learner. Students who identify the narrative themes running through their experiences, and use those themes to develop an online presence, are able to reflect, construct, and articulate a professional identity through the ePortfolio. Students then can answer the question posed by employers, "Tell me about yourself."

References

Barrett, J. W. (1953). The role of humanities and other liberal courses in the professional forestry curriculum. *Journal of Forestry, 51,* 574-578.

Basken, P. (2008). Electronic portfolios may answer calls for more accountability. *Chronicle of Higher Education, 54*(32), A30-A31.

BenDor, T. L., Lester, T. W., Livengood, A., Davis, A., & Yonavjak, L. (2015). Estimating the size and impact of the ecological restoration economy. *PLoS ONE, 10*(6), 1-15. doi:10.1371/journal.pone.0128339

Bolliger, D. U., & Shepard, C. E. (2010). Student perceptions of ePortfolio integration in online courses. *Distance Education, 31*(3), 295-314. doi:10.1080/01587919.2010.513955

Brandes, G. M., & Boskic, N. (2008). ePortfolios: From description to analysis. *International Review of Research in Open and Distributed Learning, 9*(2), 1-17. doi:10.19173/irrodl.v9i2.502

Bruner, J. (1966). *Toward a theory of instruction.* Cambridge, MA: Harvard University Press.

Bureau of Labor Statistics. (2017). *Projections overview and highlights, 2016-26*. Retrieved from https://www.bls.gov/opub/mlr/2017/article/projecti ons-overview-and-highlights-2016-26.htm

Cambridge, D. (2010). *ePortfolios for lifelong learning and assessment*. Hoboken, NJ: John Wiley & Sons.

Carnevale, A. P., Rose, S. J., & Hanson, A. R. (2013). *Certificates: Gateway to gainful employment and college degrees.* Retrieved from https://cew.georgetown.edu/wp-content/uploads/2014/11/Certificates.FullReport.06 1812.pdf

Cervero, R. M., & Daley, B. J. (2016). Continuing professional education: A contested space. *New Directions for Adult and Continuing Education, 151*, 9-18. doi:10.1002/ace.20191

Chapman, H. H. (1935). *Professional forestry schools report: Giving the comparative status of those institutions that offered instruction in Professional Forestry for the school year 1934–1935.* Washington, DC: Society of American Foresters.

Chen, B., & Bryer, T. (2012). Investigating instructional strategies for using social media in formal and informal learning. *International Review*

of Research in Open and Distributed Learning, 13*(1), 87-104. doi:10.19173/irrodl.v13i1.1027

Crawford, P., Lang, S., Fink, W., Dalton, R., & Fielitz, L. (2011). *Comparative analysis of soft skills: What is important for new graduates?* Washington, DC: Association of Public and Land-grant Universities.

Crowell, T. L., & Calamidas, E. (2016). Assessing public health majors through the use of e-portfolios. *Journal of Scholarship of Teaching and Learning, 16*(4), 62-74. doi:10.14434/josotl.v16i4.19370

Eynon, B., Gambino, L. M., & Török, J. (2014). What difference can ePortfolio make? A field report from the Connect to Learning Project. *International Journal of ePortfolio, 4*(1), 95-114. Retrieved from http://www.theijep.com/pdf/ijep127.pdf

Graves, N., & Epstein, M. (2011). ePortfolio: A tool for constructing a narrative professional identity. *Business Communication Quarterly, 74*(3), 342-346. doi:10.1177/1080569911414555

Johnson, L., Adams Becker, S., Cummins, M., Estrada, V., Freeman, A., & Hall, C. (2016). *NMC horizon report: 2016 higher education edition.* Austin, Texas: The New Media Consortium. Retrieved from https://www.learntechlib.org/p/171478/

Knowles, M. (1984). *Andragogy in action*. San Francisco, CA: Jossey-Bass.

Light, T. P., Chen, H. L., & Ittelson, J. C. (2012). *Documenting learning with ePortfolios: A guide for college instructors.* Hoboken, NJ: John Wiley & Sons.

Lowenthal, P., White, J., & Cooley, K. (2011). Remake/remodel: Using ePortfolios and a system of gates to improve student assessment and program evaluation. *International Journal of ePortfolio, 1*(1), 61-70. Retrieved from http://www.theijep.com/pdf/ijep37.pdf

Meizrow, J. (2000). *Learning as transformation: Critical perspectives on a theory in progress.* San Francisco, CA: Jossey-Bass.

Miller, R., & Morgaine, W. (2009). The benefits of e-portfolios for students and faculty in their own words. *Peer Review, 11*(1), 8-12. Retrieved from https://www.aacu.org/sites/default/files/files/peerre view/Peer_Review_Winter_2009.pdf

Peet, M., Lonn, S., Gurin, P., Boyer, K. P., Matney, M., Marra, T., Taylor, S. M., & Daley, A. (2011). Fostering integrative knowledge through ePortfolios. *International Journal of ePortfolio, 1*(1), 11-31. Retrieved from http://www.theijep.com/pdf/IJEP39.pdf

Reese, M., & Levy, R. (2009). *Assessing the future: E-portfolio trends, uses, and options in higher education.* Retrieved from

https://jscholarship.library.jhu.edu/bitstream/handle/1774.2/33329/ECAR-RB_Eportfolios.pdf

Richardson, T., Watkins, D., & Field, S. (2012). *The use of the electronic portfolio in evaluating and assessing the efficacy of graduate project management education.* Retrieved from http://pages.leadlife.com/PMI/Repository/Documents/The_Use_of_ePortfolio_paper.pdf

Robinson, J. S., & Garton, B. L. (2008). An assessment of the employability skills needed by graduates in the College of Agriculture, Food and Natural Resources at the University of Missouri. *Journal of Agricultural Education, 49*(4), 96-105. doi:10.5032/jae.2008.04096

Robles, M. M. (2012). Executive perceptions of the top 10 soft skills needed in today's workplace. *Business Communication Quarterly*, *75*(4), 453-465. doi:10.1177/1080569912460400

Robles, M. D., Flather, C. H., Stein, S. M., Nelson, M. D., & Cutko, A. (2008). The geography of private forests that support at-risk species in the conterminous United States. *Frontiers in Ecology and the Environment, 6*(6), 301-307. doi:10.1890/070106

Ruey, S. (2010). A case study of constructivist instructional strategies for adult online learning. *British Journal of Educational Technology*, *41*(5), 706-720. doi:10.1111/j.1467-8535.2009.00965.x

Sample, V. A., Block, N. E., Ringgold, P. C., & Giltmier, J. W. (1999). Forestry education: Adapting to the changing demands on professionals. *Journal of Forestry, 97*(9), 4-10.

Society for Ecological Restoration. (2018). *Ecological restoration.* Retrieved from www.ser.org

Stauffer, D. F., &. McMullin, S. L. (2009). Desired competencies and perceived proficiencies of entry-level fisheries and wildlife professionals: A survey of employers and educators. In R. E. McCabe & K. A. Stockwell (Eds.), *Transactions of the 74th North American Wildlife and Natural Resources Conference* (pp. 62-68). Retrieved from https://wildlifemanagement.institute/store/product/63

Van Lear, D. H., Carroll, W. D., Kapeluck, P. R., & Johnson, R. (2005). History and restoration of the longleaf pine-grassland ecosystem: Implications for species at risk. *Forest Ecology and Management, 211*(1-2), 150-165. doi:10.1016/j.foreco.2005.02.014

Vygotsky, L. S. (1980). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity.* New York, NY: Cambridge University Press.

Zubizarreta, J. (2009). *The learning portfolio: Reflective practice for improving student learning.* Hoboken, NJ: John Wiley & Sons.

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LESLIE CORDIE is an Assistant Professor in the Adult Education program at Auburn University. She has over 20 years of combined experiences in higher education, government and military, and corporate America. Her background includes distance learning, adult education, training, instructional design, program and professional development, and healthcare. Dr. Cordie has a Ph.D. in Adult Education and Technical Communication from Colorado State University, which includes an emphasis in Distance Learning, adult learning theory, online instructional design, and curriculum development. She also has an MBA from the University of TX at Austin, and has experience working with the airlines and the military in quality and performance improvement.

JAMIE SAILORS is the Director of Undergraduate Programs and Internships in the Department of Human Development and Family Studies (HDFS) at Auburn University. She holds a Ph.D. in Human Development and Family Studies and a Master's degree in Marriage and Family Therapy. Her professional pursuits are focused on preparing undergraduate students for successful entry into the job market or graduate school post-graduation. She believes ePortfolio work is essential for advancing students' readiness to accomplish their professional goals. She spearheaded the ePortfolio work in her department and she and her HDFS ePortfolio colleagues were honored by the Gary Brown ePortfolio Faculty Cohort Award in recognition of their collaborative work integrating the ePortfolio across the undergraduate curriculum.

BECKY BARLOW is an Alabama Cooperative Extension System Forestry Specialist and Associate Professor within the School of Forestry and Wildlife Sciences at Auburn University. Dr. Barlow aids private forest landowners in the management of their property for multiple uses. Forestland management basics are a focus of her outreach work. She also works in the area of agroforestry research and extension to provide landowners with options for generating additional revenue from their lands. In addition, she is the Auburn University Ralph Jordan Professor of Writing and teaches several upper level forestry courses in Auburn University's School of Forestry and Wildlife Sciences.

JOHN S. KUSH is a research fellow in the School of Forestry and Wildlife Sciences at Auburn University. His Bachelor of Science degree in Forest Science came from the University of Illinois, Urbana-Champaign. He received his Master's degree and Ph.D., both in Forest

Ecology, from Auburn. He has been conducting research for over 34 years with a focus on stand dynamics, fire effects, and restoration. He has taught classes in forest ecology; forest measurements; longleaf pine management; restoration ecology; forest stand dynamics; fire ecology and fire management; and natural resource sampling. He has authored/co-authored book chapters and numerous publications. He is a certified senior ecologist and was inducted into the Alabama Foresters Hall of Fame in 2017.

Engaging the Framework for Information Literacy for Higher Education as a Lens for Assessment in an ePortfolio Social Pedagogy Ecosystem for Science Teacher Education

Wesley Pitts and Alison Lehner-Quam
Lehman College

This article highlights a case study that assesses how graduate-level, in-service science teachers engage in an ePortfolio social pedagogy ecosystem to document their growth in knowledge practices and dispositions in information literacy. The ePortfolio social pedagogy ecosystem and this study are situated within the context of the Catalyst Framework. The three modes of interrelated social learning activities include: (1) authoring the written ePortfolio in an online ePortfolio digital media platform, (2) presenting the ePortfolio in the webinar platform, and (3) presenting the ePortfolio in-person in a physical setting. We used case study methodology to systematically investigate how each participant used their ePortfolio capstone exit project to engage the Association of College and Research Libraries' (2015) Framework for Information Literacy for Higher Education (ACRL Framework) as a conceptual lens to document their competencies (as part of reflective practice) in information literacy. The unit of analysis we used was the ePortfolio entry focused on using information literacy to understand science education theory and practice. Findings show that the participants emphasized content in different but connected communication modes across the ePortfolio social pedagogy ecosystem. Findings also show that ePortfolio is an effective tool for self-assessment and reflection on one's information literacy competencies. Implications for outcomes assessment are also discussed.

So my personal reflection of information literacy: thoughtful research before adding new things to one's practice can lead to more effective use of new frameworks and models in the classroom. A lot of the [science] literacy tools I researched I've actually used . . . I'm excited to continue and find new ones to experiment with as I continue on in my career. (Graduate teacher education student, ePortfolio capstone project in-class presentation)

Developments in ePortfolio practice necessitate a renewed focus on integrative social pedagogy design and assessment approaches in science teacher education. This renewed focus has developed because (a) as with other types of teacher education programs, science teacher education programs are increasing the use of ePortfolio (Cherner, 2018; National Science Teachers Association, 2018; Parkes, Dredger, & Hicks, 2013; Parkes & Kajder, 2010); and (b) there is increased pressure from accreditation organizations for teacher education programs to intentionally assess student dispositions and professional learning outcomes (Council for the Accreditation of Educator Preparation, 2018; Luera, Brunvand, & Marra, 2016; Richards-Schuster, Ruffolo, Nicoll, Distelrath, & Galura, 2014). As ePortfolio practice has found an increasing place in academic institutions, most recently named as the eleventh high impact practice by the Association of American Colleges and Universities (AAC&U; Watson, Kuh, Rhodes, Light, & Chen, 2016), there is still a need to research evidenced-based approaches in various contexts. For example, the opening quote of this article was retrieved from a student's in-class ePortfolio presentation. The

reflection revealed the student's disposition to use research skills to discover new tools to teach science and literacy in the classroom. Equally important to evaluating evidence of competency found in the student's ePortfolio reflection is assessing in what context and in what mode of communication the evidence was found. The idea of ePortfolio constructed through purposeful processes of social pedagogy, inquiry through professional practices, and reflection provides opportunities and resources to expand the range of assessment approaches for representing competency development in science education programs.

Bass and Elmendorf (2016) described the idea of social pedagogy as "design approaches for teaching and learning that engage students in authentic tasks that are communication-intensive, where the representation of knowledge for an authentic audience is absolutely central to the construction of knowledge" (p. 2). Accordingly, in implementing these projects, a central question arises of how in- and pre-service science teachers use ePortfolio to make their learning, dispositions, and competencies visible at the intersection of integrative social pedagogy and reflective practice. Examining the complexities of these intersections in ways that seek to capture deeper understandings about the creation of learning communities that leverage ePortfolio social pedagogy can offer new insights into how inquiry, reflection, and integration are approached as sociocultural resources in the development of ePortfolio practice. This intersection can form networks of community inquiry spaces where shared knowledge and processes associated with reflection and communication, as social

resources, can be represented and organized empirically to help make learning visible.

Yet at another level, what makes integration possible in the process of ePortfolio creation is not only the intersection of community inquiry spaces, but the development of intentional participatory approaches to authorship that value the connection of purpose with interpretation of experiences over time and context through reflective practice. Building on work conducted in 2004 by AAC&U and researchers like Huber and Hutchings (2004), Reynolds and Patton (2014) defined integrative learning as "an understanding and a disposition that a student builds across the curriculum and co-curriculum, from making simple connections among ideas and experiences to synthesizing and transferring learning to new, complex situation within and beyond the campus setting" (p. 31). Additionally, Chen (2009) developed the term "folio thinking" to help conceptualize the notion of ePortfolio creation as a connected process that entails systematic planning, sense-making of incorporated elements, and ways of sharing evidence of learning and performance over time. What is implicated in this notion of folio thinking is a challenge to generate new ideas and activities that engage the processes of multimodal approaches to social pedagogy in ePortfolio practice. The participatory nature of social practices and reflection-in-community that integrate social pedagogy can present significant challenges to ePortfolio practice. These challenges become particularly evident when inviting science teachers to move beyond the context of a confined course community to participate in broader community experiences where there are opportunities to synthesize sense-making that contribute to their ongoing professional development.

Approaches to ePortfolio pedagogical practice can differ strikingly across academic disciplines and professional learning communities. However, a common goal that shapes ePortfolio implementation is to increase ongoing affiliation among student, faculty, and staff interactions that help shape and increase learning. This is particularly evident in how ePortfolio practitioners operationalize elements of integrative social pedagogy. For example, Fuller (2017) used ePortfolios as a low-stakes, formative assessment tool to support engagement and mastery learning in a biology course for non-biology majors. Fuller (2017) found that students who used ePortfolios showed more engagement and communication about course materials with peers and faculty, particularly outside of class time, than students who did not use ePortfolio. Purposefully operationalized as a communicative formative assessment tool, ePortfolio pedagogy can be designed to help foster student-centered learning environments that support effective and timely communication between instructors and their students as well as among students.

Depending on purpose (intentionality) and expected learning outcomes (competencies), a key challenge to any ePortfolio pedagogical practice (e.g., social pedagogy) is to find design principles to help authors (re)construct and identify their experiences within and across the inter-subjectivities of social practices of a learning community. These design approaches must afford generative pathways to professional development through authentic inquiry experiences. In addition to consideration of purpose and outcomes in the application of social pedagogy, key challenges include harnessing authentic learning activities, using rubrics to evaluate ePortfolios, and identifying stakeholders and authentic audiences (Light, Chen, & Ittleson, 2012). Perhaps what is most important in addressing these challenges are social pedagogical practices that are guided by design approaches that integrate intentional reflective collaboration and thoughtful communicative and educative social practices. The accountability and interest grounded in being and becoming part of a learning community helps authors to experience ePortfolio design principles that are meaningful and relevant to collaborative inquiry, reflection, and integration. Within this approach, we address the follow challenge: How do ePortfolio practitioners assess the development of competencies and dispositions in the contextual circumstances of social pedagogy and learning practices of a community?

Overview and Research Questions

In this article, we highlight an ePortfolio case study that investigates how in-service science teachers engage in an ePortfolio social pedagogy ecosystem to document their competencies in information literacy in the context of learning how to conduct science education research. The Association of College and Research Libraries' (2015) Framework for Information Literacy for Higher Education (ACRL Framework) is used as an assessment lens to locate evidence of how development of competencies and dispositions in information literacy is documented by the in-service science teachers in the ePortfolio social pedagogy ecosystem.

Guided by the aforementioned challenge statement, four central research questions frame the study:

1. What ACRL frame(s) do participants select to use as a lens to demonstrate their growth in competency in the ePortfolio social pedagogy ecosystem?
2. How do they demonstrate the use of the ACRL Framework to structure their reflections on their competencies and dispositions in information literacy in the context of the ePortfolio social pedagogy ecosystem?

Figure 1
Catalyst for Learning Framework
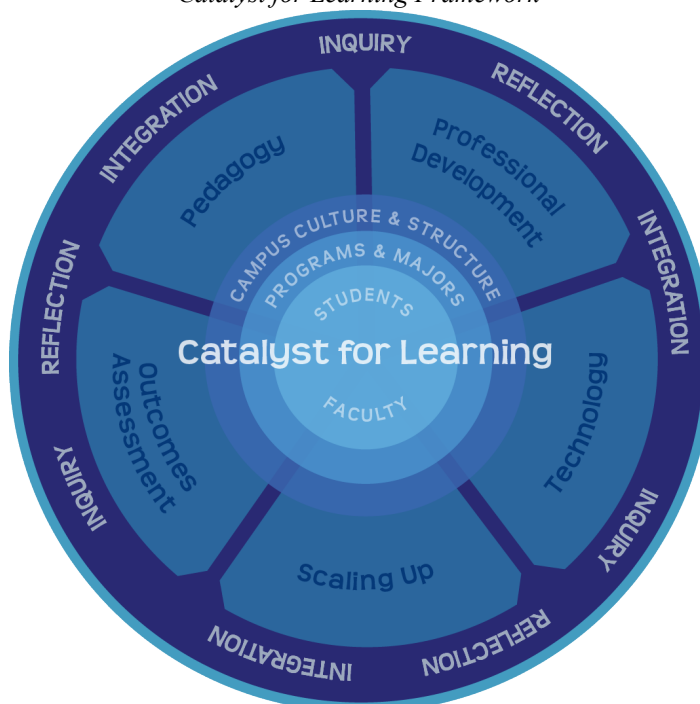
Note. From *High-Impact ePortfolio Practice: A Catalyst for Student, Faculty, and Institutional Learning* (p. 33), by B. Eynon and L. M. Gambino, 2017, Sterling, VA: Stylus. Copyright 2017 by Stylus. Reprinted with permission.

3. Where is evidence of competencies and dispositions being found within the ePortfolio social pedagogy ecosystem?
4. How can we use what we have learned about students' understanding of information literacy through the ePortfolio social pedagogy ecosystem to improve future instruction and course and assessment designs?

Theoretical Framework

The Catalyst Framework

We situate our ePortfolio practice and this study within the context of the pedagogy and outcomes assessment sectors of the Catalyst Framework. The Catalyst Framework (Figure 1) asserts three connecting value propositions: (a) ePortfolio initiatives advance student success; (b) making student learning visible, ePortfolio initiatives support reflection, social pedagogy and deepen learning; and (c) ePortfolio initiatives catalyze learning-centered institutional change (Eynon, Gambino, & Török, 2014). Guided by the aforementioned three propositions, the Catalyst Framework contains a learning core that interacts integratively with two major mushrooming but highly integrated recursive and multi-sector components of the framework. The learning core is conceptualized around institutionalized structures such as campus mission, policy, and culture that help to steer the conditions of educational practice and learning experiences (Eynon & Gambino, 2017). The learning core is inscribed by five interlocking sectors: pedagogy, professional development, technology, scaling up, and outcomes assessments. The sectors centrally focus on properties that instrumentally connect ePortfolio pedagogy with broader institutional practices articulated in each sector.

What is particularly interesting to us about the Catalyst Framework is the pedagogy and outcomes assessment sectors and their potential to link processes of engagement that frequently come together in communities within higher education with foundational design principles of ePortfolio practice, such as social pedagogy (Bass, 2017). Accordingly, the five sectors are brought together by three overarching and multilayered design principles: inquiry, reflection, and integration. As with any new framework presented to a field of practitioners and researchers, the presentation often invites interrogation and opportunities to put the framework into action and action into the framework.

In this respect, we put the framework into action by showing it at work in the context of a graduate science education capstone project. Accordingly, the Catalyst Framework is a tool for understanding ePortfolio social pedagogy practice and research as a transformative learning space. It also provides a context in which knowledge practices and dispositions found in the ACRL Framework are used as a lens to assess growth in information literacy. Next, we introduce the ACRL Framework for Information Literacy and offer a definition of information literacy.

Framework for Information Literacy for Higher Education

The ACRL Framework was adopted by the Association of College and Research Libraries Board in February 2015, was approved in 2016, and was intended as a revision of the prior ACRL (2000) standards document, *Information Literacy Competency Standards for Higher Education*. The task force responsible for revising the competency standards was charged with including continuity with American Association of School Librarians' Standards for the 21st Century Learner, and the inclusion of affective, emotional learning outcomes, and consideration of the role of student as content creator and curator (Fulkerson, Ariew, & Jacobson, 2017). The following six frames of the ACRL Framework offer core conceptual ideas about the nature of information literacy: (a) authority is constructed and contextual, (b) information creation as a process, (c) information has value, (d) research as inquiry, (e) scholarship as conversation, and (f) searching as strategic exploration. Each frame is made up of an introductory statement, knowledge practices, that demonstrate "ways in which learners can increase their understanding of these information literacy concepts" (ACLR, 2015, para. 2) and dispositions, which "describe ways in which to address the affective, attitudinal, or valuing dimension of learning" (para. 2).

While information literacy was defined previously as recognizing when information was needed and having "the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1989, para. 3; also see ACRL, 2000), the new ACRL Framework has deepened the definition by including reflection and other concepts, stating that information literacy is "the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (ACRL, 2015, para. 6). In our project, this expanded definition and the structure of the framework provide opportunities for reflection on the growth of the participant's understanding of information literacy.

We use the ACRL Framework in our ePortfolio practice to help guide deeper reflections in community conversations about information literacy in science education (Jacobson & Gibson, 2015). Even though the ACRL Framework is relatively new, it has been used as a tool to assess information literacy programs and courses by looking at student work. Rubrics have been developed on framework knowledge practices and dispositions to score student papers (Willson & Angell, 2017), to code a single question survey in a large-scale first-year composition course (Gammons & Inge, 2017), and to code first-year-student reflection essays on library search experiences (Dempsey & Jagman, 2016). These studies provide insights on ways to assess student work and improve instruction using the ACRL Framework. What happens when students use the framework as a document to guide self-reflection and integration of knowledge in ePortfolio social pedagogy is an area yet to be explored.

Theoretical Framework: Reflective Practice, ePortfolio, and Integrative Social Pedagogy

Approaches to reflective practice have been associated with several interpretive traditions that have been used to illustrate its range and potential, while also laying a foundation for questions about its utility and challenges in ePortfolio processes. Three interpretive traditions used to theorize reflective practice are summarized by Lyons (2010) as follows: (a) reflective inquiry as thinking (Dewey, 1933), (b) reflective inquiry as a way of knowing (Schön, 1983), and (c) reflective inquiry as a means to engage in critical consciousness and emancipation of practice (Freire, 1970; Van Manen, 1990). Reflective practice, as both an individual and a social process, can be approached as an interpretive inquiry-based activity (Bass, 2017; Rodgers, 2002a). In this sense, reflective practice is a search for meaning, methods, and capacities in order to interpret socially connected pathways to learn how to learn integratively and to realize and value knowledge, dispositions, and action (Reynolds & Patton, 2014). Over the last 30 years, Schön's (1983) inquiry into practitioner-generated knowledge has influenced a rich stream of research that connects various traditions of reflective practice to academic disciplines and professional practices such as, teacher education (Korthagen, 1993; Loughran, 2002; Osterman & Kottkamp, 2004), TESOL education (Farrell, 2007), medical education (Wald & Reis, 2010), nursing education (Hatlevik, 2011), biochemistry education (Walsh, 2010), and information literacy (Miller, 2018). While the term "reflective practice" encompasses varying interpretations (Corrall, 2017; Farrell, 2012; Lyons, 2010; Reynolds, 2011), perhaps what holds the most promise for thinking about reflective practice in teacher education is how it helps to shape ways to communicate dispositions towards pedagogical competencies and

Figure 2
ePortfolio Social Pedagogy Ecosystem
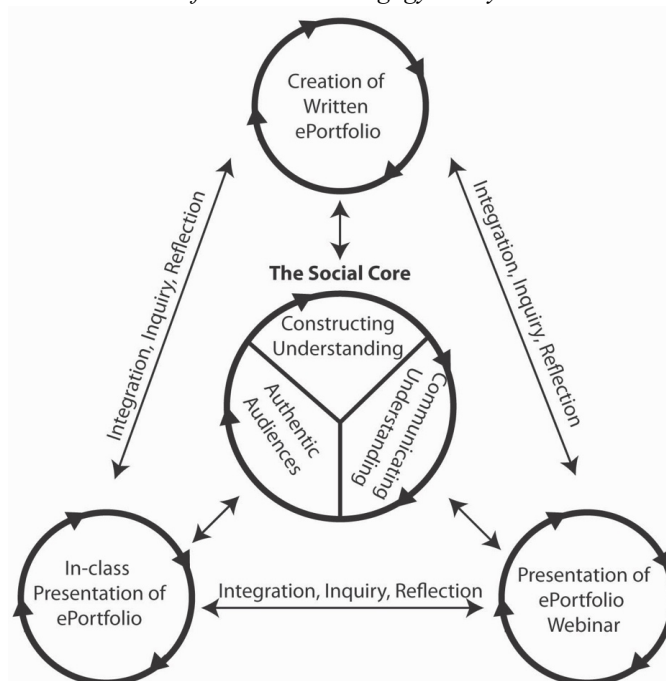
learning during participation in learning communities (Valli, 1993; Zeichner & Liston, 1996).

Reflection-in-community is a type of community building approach, particularly when used in the context of social pedagogy, which embraces active communication with audiences as a method for (co)constructing social learning. In her work with teachers, Rodgers (2002b) used the notion of reflection-in-community not only to create dynamic conversations and to find shared meaning, but to challenge claims about meaning and interpretations that serve to intentionally engage social experiences for collaborative learning. Similarly, Yoon and Kim (2010) explored collaborative reflection in teaching across three modes: writing, sharing, and discussing. They found that while reflective writing and sharing allowed student teachers to express their "dilemma cases" about classroom teaching, reflective discussion allowed participants to gain a deeper understanding of their own values about teaching (Yoon & Kim, 2010).

Using reflective practice in teacher education still poses challenges. Fendler (2003) summarizes some of the critiques and challenges of reflective practice in teacher education, cautioning that reflective practice may have performance gaps that fail to capture power relations. Loughran (2002) reminded us that rationalization of practice can shape consciousness and thinking about ways to justify existing perspectives about a particular situation. In this sense, he indicates that "rationalization may masquerade as reflection" (p. 35). Accordingly, reflection

is not always transparent in consciousness and available for observation and assessment even when attempts are made to systematize and to communicate and use outcomes of reflective experiences in community settings. In addition, Yoon and Kim (2010) found that participants in their aforementioned study often harbored the belief that a goal of collaborative reflection is to achieve a unifying conclusion. The social act of communicating the outcome of reflective practice helps to contribute to (and to problematize) the different expectations and ways of sharing learning within a community. However, having engaged in reflective practice does not always mean the desired outcomes (e.g. new ways of teaching and learning) can be communicated as they had been consciously conceptualized (Roth, 2011).

While we recognize that communicating the outcomes of reflective practice can be a substantive part of various pedagogical approaches in teacher education, like Zeichner and Wray (2001), Loughran (2002), Fendler (2003), Farrell (2012), and other reflective practice researchers, we also caution that not all approaches are productive. Keeping this caution in mind, it is important to bring into focus how the (social) pedagogy sector in the Catalyst Framework is used to guide our implementation of outcomes assessment of reflective practice in the ePortfolio social pedagogy ecosystem implemented in this study.

In this study, the ePortfolio social pedagogy ecosystem depicted in Figure 2 is grounded in the ideas of

reflection-in-community and social pedagogy shared across three complementary modes of social learning spaces. The three modes of interrelated social learning activities include: (1) authoring the written ePortfolio in an online ePortfolio digital media platform, such as TaskStream; (2) presenting the ePortfolio in a webinar platform, such as Adobe Connect; and (3) presenting the ePortfolio in-person in a physical setting. Together these modes form a social pedagogy ecosystem that is bound together by a community of participants that uses ePortfolio to share learning via reflection, integration, and inquiry, in our case, to learn about how to teach and learn science in secondary school settings. Similar to what occurs among the sectors in the Catalyst Framework, integration, inquiry, and reflection not only function to bind all three modes in the ePortfolio ecosystem, but together they also occur as key learning processes within each of these modes. Accordingly, activities that occur between and within each mode offer different as well as similar opportunities to engage the interrelated practices (Cope & Kalantzis, 2009).

Within the ecosystem, Rodgers's (2002b) notion of reflection-in-community and social pedagogy come directly together to help guide the set of interrelated social modes of practices found in what Bass (2017) called "the social core." The idea of the social core, shown as conceptually inscribed in the center of Figure 2, is an organizing feature of social pedagogy within the ecosystem. In higher education course settings, Bass (2017) characterized three essential interrelated practices in the social core as: (a) constructing understanding (ways that students deepen their core understanding of subject specific concepts by engaging in ways of thinking in a field), (b) communicating understanding (ways that students make their knowledge and learning visible to others), and (c) engagement with authentic audiences other than the instructor. The social core practices occur in iterative cycles connected by integrative learning, inquiry, and reflection in communicative social events. In this way, the social core informs essential social practices within and across each mode of the ecosystem. The social core also supports activities that use ePortfolio for building a sense of intellectual community, connecting participants to wider communities outside the classroom, deepening student reflection and other learning outcomes.

Additionally, the core provides another set of reflective resources used for growth that lie in information that is available in and for communicative actions. In social pedagogy, growth (increased competencies and literacies) comes from connecting audiences and context, and also participating in processes that offer a variety of ways to construct and communicate meaning using overlapping but different integrated literacies, including multimedia skill sets (New London Group, 1996). Accordingly, the mode of interactions depicted in the ePortfolio social pedagogy

ecosystem are connected by the three fundamental design principles found in the Catalyst Framework: integrative learning, inquiry, and reflection in the process of communication. To the extent that inquiry and integrative learning in the ecosystem help to structure and build professional competencies and literacies in social connections for communicating reflections in complementing modes of community spaces (Rodgers, 2002b), so does reflection help to structure social connections for inquiry and integrative learning in these same spaces (Bass, 2017; Reynolds & Patton, 2014).

For example, Parkes and Kajder (2010) used ePortfolio that incorporated digital modes of expression, such as blogs, vlogs (i.e., video-based journal entries), and video collages, as evidence to explore the reflective performances of English education and music education pre-service teachers about their student teaching experiences. The content of the blogs, vlogs, and video collages incorporated course assignments and analytical reflections from field placement experiences that were dynamically selected and used as evidence by the students in their capstone ePortfolio to illustrate reflection-on-practice and critical reflection of growth. Each student produced their master's thesis ePortfolio capstone project and then defended it orally. Parkes and Kajder (2010) noted in their findings that even students who were challenged by the technology indicated that they consistently felt that their learning was enhanced by frequently reflecting on their understanding of practice.

In a follow-up study with a similar context, Kajder and Parkes (2012) assessed pre-service teachers' journal reflections about their student teaching experiences created across weblogs and vlogs. In this study, they found that in general, participants produced weblogs that documented reflection practice categorized by Larrivee (2008) as service-level reflection capturing pedagogical context and instructional descriptions, while vlogs documented level-three reflection capturing ways participants thought about student learning and how to enhance learning experiences. Participants in their study seem to produce different reflections depending on the mode of digital media used (e.g., weblogs or vlogs) and depending on the students' perceptions about the processes. Building on their study, we assert that the use of social pedagogical practices creates new opportunities in ePortfolio practice to connect multiple modes of purposeful and participatory reflective practice for social learning. In this context, reflective practice is informed by the processes of integration and inquiry, as well as the social core. Unlike Parkes and Kajder (2010), the study presented in this article explicitly explores where evidence of competencies is being found in the process of assessing the outcome of reflective practice in the ePortfolio social pedagogy ecosystem.

Methodology

Background and Context

The science education ePortfolio exit project is a high-stakes assessment that was added as a degree requirement to the Master of Science: Secondary Science Education Program at an urban public college in New York State in 2010. The ePortfolio exit project is semi-structured where students have to illustrate growth within each of the following competency areas: (a) reflective practice, (b) using information literacy to understand science education theory and practice, (c) using pedagogical knowledge in designing instruction and assessment; (d) culturally responsive pedagogy, (e) using science content area knowledge, and (f) professional collaborations. The ePortfolio exit project is designed in TaskStream with general guidelines requiring that participants use appropriate baseline and corresponding post-baseline evidence to explain and depict growth within six major competency areas (Pitts & Ruggirello, 2012).

In 2015, the ePortfolio capstone project was reframed in the context of the social pedagogy ePortfolio ecosystem using design approaches for teaching and learning that engage students specifically in: (a) constructing understanding (i.e., ways that students deepen their core understanding to inform their understanding of teaching and learning science), (b) communicating understanding (i.e., ways that students make their knowledge and learning visible to others using the modes of interaction framed by the ePortfolio capstone project), and (c) engaging with an authentic audiences (i.e., audience other that the instructor; Bass, 2017; Bass & Elmendorf, 2016). In an effort to reframe the information literacy ePortfolio entry and the information literacy instruction in the capstone courses, the ACRL Framework was introduced to the class in January 2017 with the intention of being used as a conceptual lens and tool for student reflection on their own information literacy skills and dispositions. In the middle of the second semester, students created a 30-minute webinar based on the information literacy component and two other components of their choice which they presented in the Urban College ePortfolio Seminar Series. The webinars were conducted using Blackboard Collaborate. The college community, including program alumni and other science education professionals, were invited to participate in the webinar. At completion of the second semester, students were required to present their ePortfolios in-class (i.e., in-person) to members of the class and invited guests. In this way, Students presented their written ePortfolios in two additional interconnecting modes of the social pedagogy ecosystem (i.e., the webinar and in-class presentation).

Research Design

A case study approach (Yin, 2009) was used to systematically investigate how each participant used the ePortfolio capstone exit project to engage the ACRL Framework as a conceptual lens to document their competencies (as part of reflective practice) in using information literacy. The unit of analysis was the ePortfolio entry concerning using information literacy to understand science education theory and practice. This unit of analysis facilitated comparisons of participants in each mode as to how they used the ACRL Framework in this entry to illustrate and reflect on the ways they improved their understanding and practice of information literacy concepts. Evidence of the outcome of their reflections were tracked across all three key modes of the social pedagogy ecosystem: the written ePortfolio, ePortfolio webinar, and in-class ePortfolio presentation. We looked for consistencies and contradictions to seek out patterns within and across datasets we collected for each participant. Below, we highlight participants' data gathered from the ePortfolio baseline and post-baseline evidence that participants used to reflect on their growth in information literacy.

Participants

We recruited three of seven students in the capstone class to participate in the study. All were graduate students in the secondary science education program. Two of three participants were in-service, early career science teachers while one in-service teacher was mid-career. One of the participants was a career changer. Participants ranged in age from early 20s to early 50s. There was one male and two female participants.

All students created an Information Literacy section in the written ePortfolio. Andrea, Elias, and Fran (all pseudonyms) situated their information literacy reflections in the framework by highlighting three frames: research as inquiry, searching as strategic exploration, and information has value (Table 1). Two of the three students selected two frames and found ways to reflect on the interconnectivity of the frames.

Data Collection

Data were collected in the 2016-17 academic year from all three modes of reflective practice in the ePortfolio social pedagogy ecosystem. Each participant was issued a pseudonym before collecting and analyzing the data. The pseudonyms were used to blind the data and were associated with each category of the data collected from the respective participant (Table 1). The data were collected from the three modes of the information literacy ePortfolio section (Table 2).

Table 1
Summary of In-Service Teacher Participants and Their Selected ACRL Frames

Student	Sciences	Information literacy ePortfolio section title	ACRL Frames
Andrea	Living Environment	Research as Inquiry vis-à-vis Searching as Strategic Exploration	Research as Inquiry & Searching as Strategic Exploration
Elias	Earth Science	Understanding of Science Ed Literature/Theory/Information Literacy Entry	Research as Inquiry
Fran	Earth Science	The Information Literacy Process: Research as Inquiry Leading to Information Has Value	Research as Inquiry and Information has Value

Table 2
ACRL Frame: Research as Inquiry

Research as Inquiry	Andrea			Elias			Fran		
	ePortfolio	Webinar	Pres.	ePortfolio	Webinar	Pres.	ePortfolio	Webinar	Pres.
Knowledge practices: Evidence	5	7	7	7	3	7	6	8	8
Knowledge practices: No evidence	3	1	1	1	5	1	2	0	0
Dispositions: Evidence	8	8	8	7	5	8	7	8	8
Dispositions: No evidence	1	1	1	2	4	1	2	1	1
Total: Evidence	13	15	15	14	8	15	13	16	16
Total: No evidence	4	2	2	3	9	2	4	1	1

Note. "Pres." = Presentation. Total number of knowledge practices = 8. Total number of dispositions = 9.

All presentations, including the webinar, were recorded and transcribed.

Data Analysis

Data collected from the ePortfolio information literacy entry, which included data from all three presentation modes were subjected to two levels of coding and analysis. The outcome of the level one coding analysis was used to guide the selection of the ACRL frame to code for level two and facilitated the exploration of research question one. To obtain trustworthiness, discrepancies in coding among the two researchers were discussed until agreement was found.

In level-two coding, evidence of participants' use of the research as inquiry ACRL frame, which was selected by three students, was used to identify their reflections about their information literacy competency across all three modes (Table 2). The knowledge, practices, and dispositions associated with research as inquiry were used to code for evidence. An evidence code was assigned if participants demonstrated all aspects of a particular respective knowledge practice or disposition in each mode of their ePortfolio entry. A partial evidence code was assigned if they only demonstrated a part of the knowledge practice or disposition and no evidence was given if the knowledge practice or disposition was not demonstrated. While we coded for no evidence, partial evidence, and complete evidence, in Table 2 partial and complete evidence have been combined into a single evidence category. Appendix A provides a sample coding chart.

Results

Evidence for How Research as Inquiry is Used as a Lens to Structure Reflection in Knowledge Practices and Dispositions in Information Literacy

Throughout the ePortfolio social pedagogy ecosystem, participants deepened their learning about information literacy and made learning visible by engaging with the knowledge practices and dispositions found in the ACRL frame in a variety of ways guided

Figure 3
Andrea's Synthesis of Research as Inquiry and Searching as Strategic Exploration Chart
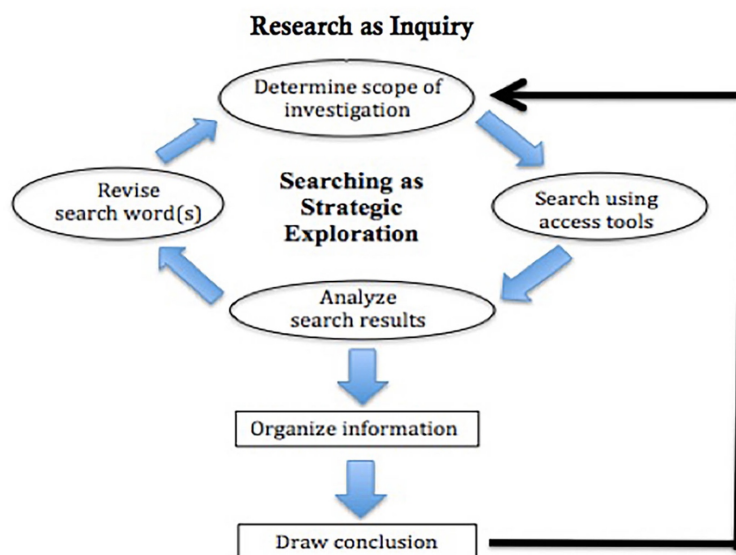
by the social core. Bass (2017) indicated that ePortfolio social pedagogy consonant with the social core helps create outcomes that deepen intellectual and personal significance in networks of social learning processes that better connect students with their peers and lift learning outside the boundaries of the classroom. Table 2 shows evidence of research as inquiry knowledge practices and dispositions across presentation modes for the three students. Research as inquiry addresses knowledge practices and dispositions involved in conducting research that are "iterative and depend upon asking increasingly complex or new questions whose answers in turn develop additional questions or lines of inquiry" (ACRL, 2015, para. 19). This frame aligned with information literacy instruction and assignments experienced by the class.

All three students demonstrated greater evidence of the knowledge practices and dispositions in their final in-class presentations and, for all three students, evidence was not consistent across all three forms of presentation. In the research as inquiry frame there are eight knowledge practices and nine dispositions, so the most evidence that could be demonstrated is 17. Two students, Andrea and Fran, showed greater evidence of the knowledge practices in their webinar and in-class presentations than in their written ePortfolios. Andrea demonstrated evidence for 15 knowledge practices and dispositions in her webinar and in-class presentation, compared with 13 in her written ePortfolio. In addition, Fran showed evidence of all of the knowledge practices in her webinar and in-class presentations (eight), but not in her written ePortfolio, where she showed evidence of six. Elias showed more

evidence in his written ePortfolio (14) and final presentation (15) than in his webinar (eight).

Andrea. Andrea titled her information literacy ePortfolio section Research as Inquiry vis-a-vis Searching as Strategic Exploration and she found numerous ways to demonstrate her understanding of the two frames in all of her presentations. Reflection-for-action, a way to guide future action (Killion & Todnem, 1991), was demonstrated in both her written ePortfolio and in her webinar as she discussed sharing new research skills with her students. In the written ePortfolio, she wrote that discovering science education research and learning how to use databases, "eventually helped me realize that as a science teacher, I should enhance myself in information literacy to guide my students as they learn and perform science to foster critical thinking and become well-informed citizens of the world." She shared a similar idea in her webinar, where she reflected on how developing her information literacy abilities relates to developing those abilities in her students, saying,

> I develop my literacy abilities looking for relevant information. If I have developed my literacy abilities, that is to search and to locate information, when I do research, then I will be able to guide my students if I assign projects requiring research.

This is a powerful idea to communicate to the participants in the webinar because she makes explicit the connection between her research skills and the research skills she wants her high school students to possess.

She showed greater evidence of the frame research as inquiry in her webinar and presentation than in her written ePortfolio. In her webinar and in-class presentation, where she showed evidence of 15 of 17 research as inquiry knowledge practices and dispositions, she shared new information about how she developed her research topic by talking with teachers at her school about their information needs. She enhanced her final presentation by adding concepts from her research and communicated understanding by sharing that she has integrated these concepts into her classroom. The webinar and final presentation had more evidence and content not included in her written ePortfolio, for which she showed evidence of 13 knowledge practices and dispositions.

Figure 3 depicts how Andrea used a flowchart to communicate her understanding of relationships between research as inquiry and searching as strategic exploration frames and she shared this understanding with her cohort in the webinar and in-class presentation, as well as in the written ePortfolio. The flowchart shows the synthesis of her experiences in her inquiry into two frames by exploring the relationships between them, noting common knowledge practices (e.g., determine scope, analyze search results, organize information) and those that are unique to one frame, such as research as inquiry (e.g., draw conclusions) and searching as strategic exploration (e.g., use different types of searching language appropriately). To make this original content she needed to draw on her own research experiences and align them with the knowledge practices of the two frames.

Elias. Elias's written ePortfolio demonstrated the second most evidence for research as inquiry frame within his presentation modes by showing evidence of 14 of 17 knowledge practices and dispositions. In his written ePortfolio he introduced his scope of research on "best practices to develop academic literacy for ELLs in the secondary science classroom." His written ePortfolio had more evidence than Andrea's and Fran's written ePortfolios. However, his webinar showed evidence of eight of 17 knowledge practices and dispositions, which, unlike the other two participants, was less than in his written ePortfolio and in-class presentation, which showed evidence of 15 knowledge practices and dispositions. In his webinar, he demonstrated reflection-on-action, interrogating an event that has transpired (Killion & Todnem, 1991; Rodgers, 2002b), when he considered his previous experiences with research where he would "find one article and read about it." He compared this with the rigorous experiences in his annotated bibliography where "you have to keep doing it and you can't give up." This research process transformation reflection was first presented in the webinar. It was not communicated in the written ePortfolio. In his final

presentation he added new information about using other databases and sources, which demonstrated his ability to gather information from multiple sources (research as inquiry knowledge practice).

Fran. Fran demonstrated the most research as inquiry frame knowledge practices and dispositions evidence in her webinar and presentation, with both having evidence of 16 of 17 knowledge practices and dispositions. Evidence in her webinar and presentation was greater than the evidence in her written ePortfolio, which showed evidence of 13 knowledge practices and dispositions. Fran also addressed two frames in her work, which are reflected in her title: The Information Literacy Process: Research as Inquiry Leading to Information Has Value. Fran used the ACRL frames in her presentations to support her reflection-on-action and reflection-for-action as she communicated understanding of the value of using research in the context of her work in the classroom. Fran integrated her understanding of these frames in her webinar as she talked about the inquiry process as she homed in on a research topic. In the webinar and presentation, she talked about numerous questions she had asked about her topic throughout the inquiry process. She shared her reflection on the research as inquiry frame and she demonstrated how, through the research process of inquiry, she refined her topic: "investigating how to develop and enhance students' science literacy skills throughout the American middle school experience," thus using reflection to share the process of determining an appropriate scope of her work, a research as inquiry knowledge practice.

Fran shared the following reflection in her final in-class presentation,

> I used to . . . think if I'm going to do a research project I would type in a few things, find a few articles, and boom, I got a paper. However, through the process of developing my annotated bibliography and picking a topic I was truly interested because I knew it would help me in my career, [which] changed my perspective about scholarly research.

Fran, like her classmates, engaged in integrative learning by recognizing and connecting her past research practices and reflecting on ways that she has improved her information literacy practice (Reynolds & Patton, 2014).

Evidence of Research as Inquiry Knowledge Practices and Dispositions Found Across All Modes

A look at individual knowledge practices and dispositions across all modes (i.e., ePortfolio, webinar presentation, and in-class presentation) can provide information about how to improve information literacy

instruction. Figure 4 shows the summary percentage of evidence across presentation modes of the research as inquiry knowledge practices. In all knowledge practices, the amount of evidence demonstrated (complete or partial) was 66.66% to 100.00%. "Organize information in meaningful ways" and "draw reasonable conclusions based on the analysis and interpretation of information" had 33.33% occurrences of no evidence. Researchers could offer further discussion on these topics in the next cohort.

Figure 5 shows the summary percentage of evidence across modes of the research as inquiry dispositions. Students demonstrated the strength of their research as inquiry dispositions as five of the nine dispositions were evidenced in all modes by all three students. On the other hand, one disposition—"seek appropriate help when needed"—had 66.66% occurrences of no evidence across the various modes of presentation, which will be taken into account for the next cohort.

Limitations

At this stage of ACRL Framework exploration, a few researchers are beginning to develop rubrics for specific knowledge practices and frames, based on their information literacy instruction focus (Gammons & Inge, 2017; Willson & Angell, 2017). In our project, the coding was based on the evidence discovered in the review of the transcripts. Although we considered the coding and results informative, especially for future instruction, a rubric could help standardize response coding to ensure consistency. A further limitation is the small sample size ($n = 3$) of our case study research. Future studies with a larger sample size should be conducted to help validate the results of this study.

Discussion

Participants emphasize content in their reflections in different but connected communication modes across the ePortfolio social pedagogy ecosystem (written ePortfolio, webinar presentation, in-class presentation; Table 2). In some cases, detailed information found in the written ePortfolio introduction illuminated understanding of the ACRL Framework in a deeper way than the webinar and thus, the greater amount of ACRL Framework evidence in the written ePortfolio reflects this. In two cases (Andrea, with 15 out of 17 research as inquiry knowledge practices and dispositions, and Fran, with 16 out of 17 research as inquiry knowledge practices and dispositions), webinar and in-class presentation ACRL Framework evidence levels were consistent and greater than their written ePortfolios. On the other hand, in one case (Elias, with eight of 17 research as inquiry knowledge practices and

Figure 4
Summary Percentage of Evidence of Research as Inquiry Knowledge Practices
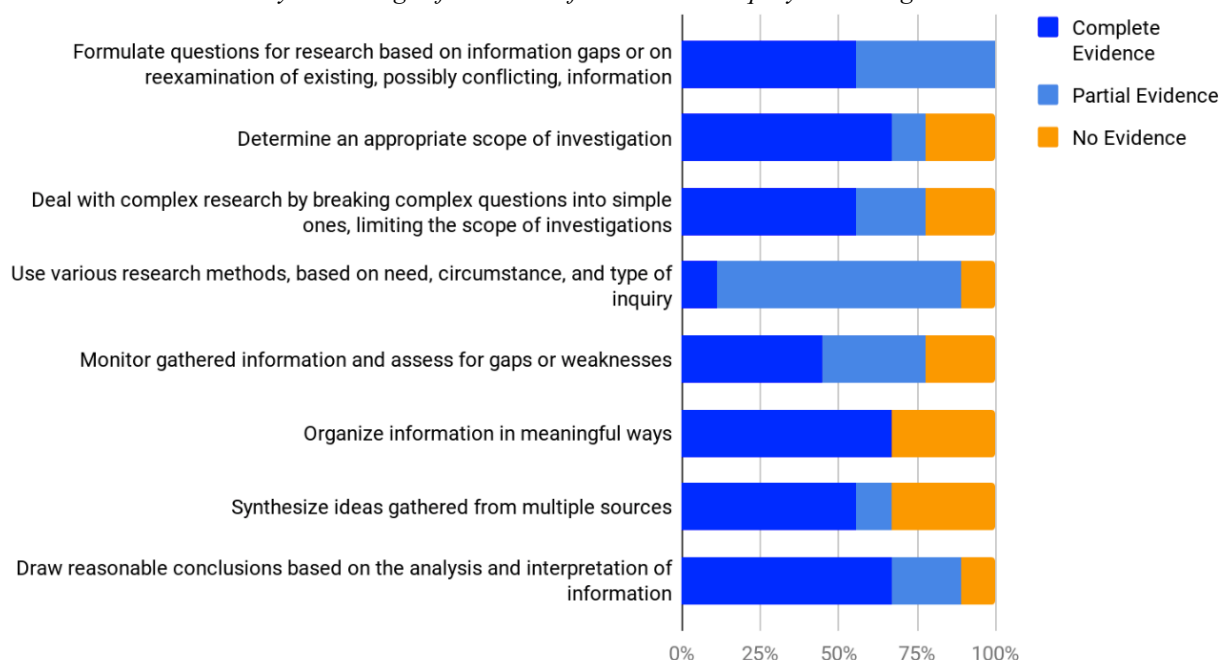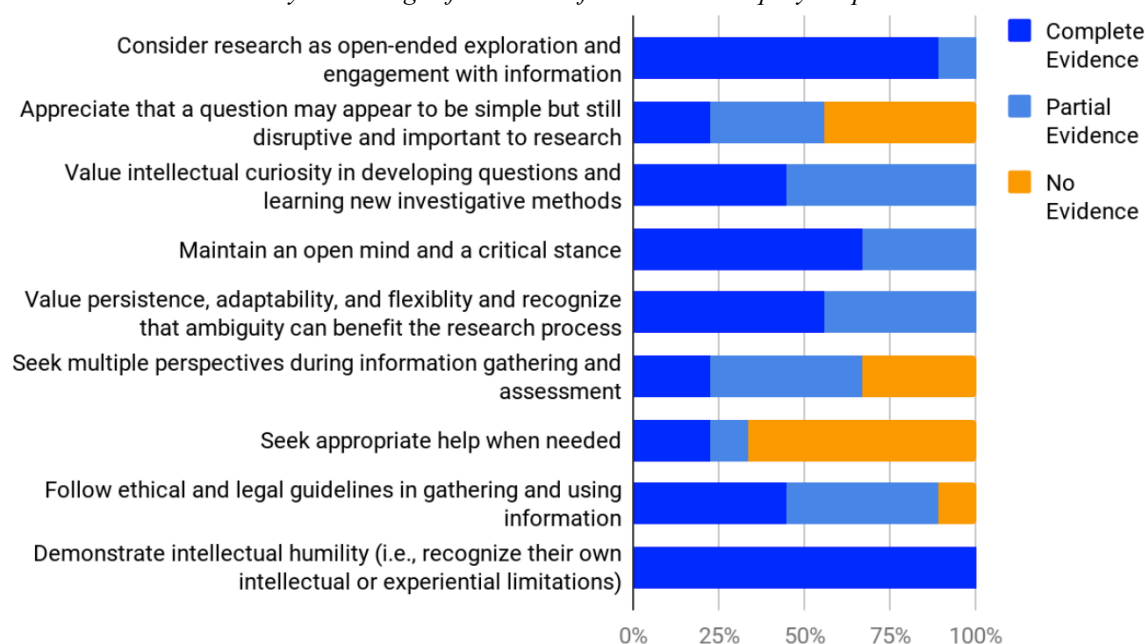
Figure 5
Summary Percentage of Evidence of Research as Inquiry Dispositions

dispositions in his webinar, and then 15 of 17 knowledge practices and dispositions in his in-class presentation) webinar and in-class presentation evidence varies quite a bit. It also could be a function of the various presentation modes (New London Group, 1996). This is a similar result to what Kajder and Parkes (2012) found in their study in which participants' blogged reflections tended to document their learning about curriculum and technical content while their vlogs tended to document their learning about pedagogical strategies and impact on learning.

When participants engage across modes, what is often found is that some participants will demonstrate greater competency in one area than others. It is possible that their written skills might be stronger than their presentation skills. On the other hand, improved ACRL Framework evidence from webinar to in-class presentation could occur because of the social pedagogy ecosystem. By participating in a structured series of ePortfolio presentations, either as a presenter or as an active member of the audience, Elias had an opportunity to observe presentations that showed greater evidence of the ACRL Framework and to ask colleagues questions about their research experiences. This may have led to reflection in the process of communication, where he may have refined his ideas about how to present in a community, and that may have had implications for how he went about creating and communicating a reflection in his final presentation, where he showed the greatest evidence of his three presentation modes.

According to the outcomes assessment sector of the Catalyst Framework, incorporating reflection in the context of social pedagogy helps to improve future instruction and course and assessment designs (Eynon & Gambino, 2018). In the study presented in this article, the ePortfolio social pedagogy ecosystem helped to transform outcomes assessment associated with the ACRL Framework into collective learning opportunities that highlight the framework's value for student learning in the area of information literacy. Accordingly, a key implication of this study is the opportunity for researchers involved to deepen their understanding of assessing the ways science teachers use the new ACRL Framework to guide their learning about information literacy.

We are considering introducing the ACRL Framework at the beginning of the capstone project instead of mid-cycle in January, after the completion of the annotated bibliography assignment. Although two participants expressed comfort with the framework and felt that it supported their reflections on their research experiences, one participant did not feel that he had enough time to "digest" the concepts. Elias expressed, "[I]t's very hard to digest. I know that we had a very good activity in [January]. . . . How does this apply? Maybe another session, because it would help to have a little more." By introducing the framework earlier in the year, we could provide opportunities to explore and reflect on it throughout the research process and we could give participants time to digest it and more opportunities to connect their work to it.

Conclusion

The second proposition of the Catalyst Framework asserts that by making student learning visible, ePortfolio initiatives support reflection, social pedagogy, and deepen learning (Eynon et al., 2014). Consistent with this proposition, all three students engaged with the ACRL Framework by explicitly identifying frames through which they could explore their information literacy competency growth through the context of the ePortfolio social pedagogy ecosystem. Working within the context of the ePortfolio social pedagogy ecosystem appears to provide an effective way for students to integrate deeper learning and to document their developing competencies as part of reflective practice guided by designed elements found in the social core. Using the ACRL knowledge practices and dispositions in the three modes of the ecosystem, all three students expressed their competencies in information literacy by demonstrating integration, reflection and inquiry. This concurs with Jacobson and Gibson's (2015) suggestion that ePortfolios would be an effective assessment method of a student's growth in information literacy, or in the case of the student participants in this cohort, a self-assessment tool. Students were able to directly study the ACRL Framework, just as they study other frameworks, as part of their ePortfolio social pedagogy ecosystem. The significance of using the ACRL Framework as a reflective lens for information literacy can help secondary science teachers be more intentional in their reflective practice and pedagogy as teachers.

Finally, the use of written ePortfolios as the only form (i.e., mode) to assess learning has the potential to keep aspects of students' learning invisible. As indicated at the beginning of the article, the significance of the opening quote is not only its content, but what mode and when it was produced in the context of the ePortfolio social pedagogy ecosystem. We assert that using the ePortfolio for learning across connected learning environments will provide new opportunities for ePortfolio practitioners and authors to engage in deeper learning activities and more valuable, informative, and social forms of assessment. In this way, ePortfolio social pedagogy has the potential to drive multiple modes of reflective practice, and also multiple approaches to folio thinking. As such, done well, approaches to ePortfolio social pedagogy assessment must take into account multiple modes of reflective practice and folio thinking.

References

American Library Association. (1989). *Presidential committee on information literacy*. Retrieved from http://www.ala.org/acrl/publications/whitepapers/p residential

Association of College & Research Libraries (ACRL). (2000). *Information literacy competency standards for higher education*. Retrieved from http://www.ala.org/acrl/standards/informationlitera cycompetency

Association of College & Research Libraries (ACRL). (2015). *Information literacy framework for higher education*. Retrieved from http://www.ala.org/acrl/standards/ilframework

Bass, R. (2017). Social pedagogies in ePortfolio practices: Principles for design and impact. In B. Eynon & L. M. Gambino (Eds.), *High impact ePortfolio practices: A catalyst for student, faculty and institutional learning* (pp. 65-75). Sterling, VA: Stylus.

Bass, R., & Elmendorf, H. (2016). Designing for difficulty: Social pedagogy as a framework for course design. Teagle Foundation white paper. New York, NY: Teagle Foundation.

Chen, H. L. (2009). Using ePortfolios to support lifelong and lifewide learning. In D. Cambridge, B. L. Cambridge, & K. B. Yancey (Eds.), *Electronic portfolios 2.0: Emergent research on implementation and impact* (pp. 29-36). Sterling VA: Stylus.

Cherner, T. (2018). Using ePortfolio on the teacher job hunt. *AAEEBL ePortfolio Review, 2*(3), 12-15.

Cope, B., & Kalantzis, M. (2009). "Multiliteracies": New literacies, new learning. *Pedagogies: An International Journal*, *4*(3), 164-195. doi:10.1080/15544800903076044

Corrall, S. (2017). Crossing the threshold:Reflective practice in information literacy development. Journal of Information Literacy, 11(2), 23 -53. doi:10.11645/11.1.2241.

Council for the Accreditation of Educator Preparation (CAEP). (May 2018). CAEP handbook: initial level programs. Retrieved from http://www.ncate.org/~/media/Files/caep/accreditat ion-resources/final-2018-initial-handbook-5-22.pdf?la=en

Dempsey, P. R., & Jagman, H. (2016). "I felt like such a freshman": First-year students crossing the library threshold. *Portal: Libraries and the Academy. 16*(1), 89-107. doi:10.1353/pla.2016.0011

Dewey, J. (1933). *How we think*. Buffalo, NY: Prometheus Books.

Eynon, B., & Gambino, L. M. (2017). *High impact ePortfolio practice: A catalyst for student, faculty and institutional learning.* Sterling, VA: Stylus.

Eynon, B., & Gambino, L. M. (Eds.). (2018). *Catalyst in action: Case studies of high-impact ePortfolio practice.* Sterling, VA: Stylus.

Eynon, B., Gambino, L. M., & Török, J. (2014). What difference can ePortfolio make? A field report from the Connect to Learning project. *International

Journal of ePortfolio, 4(1), 95-114. Retrieved from http://www.theijep.com/pdf/ijep127.pdf

Farrell, T. S. C. (2007). *Reflective language teaching: From research to practice.* London, England: Continuum.

Farrell, T. S. C. (2012). Reflecting on reflective practice: (Re)visiting Dewey and Schön. *TESOL Journal, 3*(1), 7-16. doi:10.1002/tesj.10

Fendler, L. (2003). Teacher reflection in a hall of mirrors: Historical influences and political reverberations. *Educational Researcher, 32*(3), 16-25. doi:10.3102/0013189X032003016

Fulkerson, D. M., Ariew, S. A., & Jacobson, T. E. (2017). Revisiting metacognition and metaliteracy in the ACRL Framework. *Communications in Information Literacy*, *11*(1), 21-41. doi:10.15760/comminfolit.2017.11.1.45

Freire, P. (1970). *Pedagogy of the oppressed.* New York, NY: Continuum International.

Fuller, K. (2017). Beyond reflection: Using ePortfolios for formative assessment to improve student engagement in non-majors introductory science. *American Biology Teacher, 79*(6), 442-449. doi:10.1525/abt.2017.79.6.442

Gammons, R., & Inge, L. (2017). Using the ACRL Framework to develop a student-centered model for program-level assessment. *Communications in Information Literacy*, *11*(1), 168-184. doi:10.15760/comminfolit.2017.11.1.40

Hatlevik, I. (2011). The theory-practice relationship: reflective skills and theoretical knowledge as key factors in bridging the gap between theory and practice in initial nursing education. *Journal of Advanced Nursing, 68*(4), 868-877. doi:10.1111/j.1365-2648.2011.05789.x

Huber, M. T., & Hutchings, P. (2004). *Integrative learning: Mapping the terrain. The academy in transition.* Washington, DC: Association of American Colleges & Universities.

Jacobson, T. E., & Gibson, C. (2015). First thoughts on implementing the framework for information literacy. *Communications in Information Literacy, 9*(2), 102. doi:10.15760/comminfolit.2015.9.2.187

Kajder, S. B., & Parkes, K. A. (2012). Examining preservice teachers' reflective practice within and across multimodal writing environments. *Journal of Technology and Teacher Education, 20*(3), 229-249.

Killion, J. P., & Todnem, G. R. (1991). A process for personal theory building. *Educational Leadership*, *48*(6), 14-16.

Korthagen, F. (1993). Two modes of reflection. *Teaching and Teacher Education, 9*(3), 317-326.

Larrivee, B. (2008). Development of a tool to assess teachers' level of reflective practice. *Reflective Practice, 9*(3), 341-360. doi:10.1080/14623940802207451

Light, P. L., Chen, H. L., & Ittleson, J. C. (2012). *Documenting learning with ePortfolios: A guide for college instructors.* Hoboken, NJ: Wiley.

Loughran, J. (2002). Effective reflective practice: In search of meaning in learning about teaching. *Journal of Teacher Education, 53*(1), 33-43. doi:10.1177/0022487102053001004

Luera, G., Brunvand, S., & Marra, T. (2016). Challenges and rewards of implementing ePortfolios through a bottom-up approach. *International Journal of ePortfolio*, *6*(2), 127-137. Retrieved from http://www.theijep.com/pdf/IJEP235.pdf

Lyons, N. (Ed.). (2010). *Handbook of reflective practice and reflective inquiry: Mapping a way of knowing for professional reflective inquiry.* New York, NY: Springer.

Miller, S. (2018). Diving deep: Reflective questions for identifying tacit disciplinary information literacy knowledge practices, dispositions, and values through the ACRL Framework for Information Literacy. The Journal of Academic Librarianship,44, 412-418. doi:10.1016/j.acalib.2018.02.014

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60-92.

National Science Teachers Association. (2018). Professional development: NSTA standards for science teacher preparation. Retrieved from https://www.nsta.org/preservice/

Osterman, K. P., & Kottkamp, R. B. (2004). *Reflective practice for educators: Improving schooling through professional development.* Thousand Oaks, CA: Corwin Press.

Parkes, K., Dredger, K., & Hicks, D. (2013). ePortfolio as a measure of reflective practice. *International Journal of ePortfolio, 3*(2), 99-115. Retrieved from http://www.theijep.com/pdf/IJEP110.pdf

Parkes, K. A., & Kajder, S. (2010). Eliciting and assessing reflective practice: A case study in Web 2.0 technologies. *International Journal of Teaching and Learning in Higher Education, 22*(2), 218-228. Retrieved from http://www.isetl.org/ijtlhe/pdf/IJTLHE947.pdf

Pitts, W., & Ruggirello, R. (2012). Using the e-portfolio to document and evaluate growth in reflective practice: The development and application of a conceptual framework. *International Journal of ePortfolio, 2*(1), 49-74. Retrieved from http://www.theijep.com/pdf/IJEP43.pdf

Reynolds, C., & Patton, J. (2014). *Leveraging the ePortfolio for integrative learning.* Sterling, VA: Stylus.

Reynolds, M. (2011). Reflective practice: origins and interpretations. *Action Learning: Research and Practice*, *8*(1), 5-13. doi:10.1080/14767333.2011.549321

Richards-Schuster, K., Ruffolo, M. C., Nicoll, K. L., Distelrath, C., & Galura, J. A. (2014). Using ePortfolios to assess program goals, integrative learning, and civic engagement: A case example. *International Journal of ePortfolio*, *4*(2), 133-141. Retrieved from http://www.theijep.com/pdf/IJEP150.pdf

Rodgers, C. (2002a). Defining reflection: Another look at John Dewey and reflective thinking. *Teachers College Record, 104*(4), 842-866. doi:10.1111/1467-9620.00181

Rodgers, C. (2002b). Seeing student learning: Teacher change and the role of reflection. *Harvard Education Review, 72*(2), 230-251.

Roth, W.-M. (2011). *Passibility: At the limits of the constructivist metaphor.* New York, NY: Springer.

Schön, D. (1983). *The reflective practitioner: How professionals think in action.* New York, NY: Basic Books.

Valli, L. (1993). Reflective teacher education programs: An analysis of case studies. In J. Calderhead & P. Gates (Eds.), *Conceptualising reflection in teacher development.* London, UK: Falmer.

Van Manen, M. (1990). *Researching the lived experiences: Human sciences for an action sensitive pedagogy.* State University of New York Press, Albany.

Wald, H. S., & Reis, S. P. (2010). Beyond the margins: Reflective writing and development of reflective capacity in medical education. *Journal of General Internal Medicine, 25*(7), 746-749. doi:10.1007/s11606-010-1347-4

Walsh, G. (2010). The importance of and an approach to comprehensive reflective practice. *Biochemistry and Molecular Biology Education, 38*(1), 1-3. doi:10.1002/bmb.20370

Watson, C. E., Kuh, G. D., Rhodes, T., Light, T. P., and Chen, H. L. (2016). ePortfolios-The eleventh high impact practice. *International Journal of ePortfolio, 6*(2), 65-69.

Willson, G., & Angell, K. (2017). Mapping the Association of College and Research Libraries information literacy framework and nursing professional standards onto an assessment rubric. *Journal of the Medical Library Association, 105*(2), 150-154. doi:10.5195/jmla.2017.39

Yin, R. K. (2009). *Case study research: Design and methods.* Thousand Oaks, CA: Sage Inc.

Yoon, H., & Kim, M. (2010). Collaborative reflection through dilemma cases of science practical work during practicum. *International Journal of Science Education, 32*(3), 282-301. doi:10.1080/09500690802516538

Zeichner, K.M., & Liston, D. P. (1996). *Reflective teaching: An introduction.* Mahwah, NJ: Lawrence Erlbaum.

Zeichner, K. M., & Wray, S. (2001). The teaching portfolio in US teacher education programs: What we know and what we need to know. *Teaching and Teacher Education, 17*(95), 613-612.

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WESLEY PITTS is an associate professor of science education in the Department of Middle and High School Education (MHSE), School of Education, Lehman College, CUNY. Dr. Pitts serves as the chair of MHSE. Dr. Pitts is also a faculty member in the PhD Program in Urban Education at the CUNY Graduate Center. His research uses frameworks from cultural studies to investigate how encounters in urban secondary and post-secondary education settings and science teacher preparation programs create success in science education. His current research projects include using ePortfolio in science teacher education to deepen integrative social pedagogy.

ALISON LEHNER-QUAM is an assistant professor and Education Librarian at Leonard Lief Library, Lehman College. Her research interests intersect with two aspects of her library role: information literacy instruction and the development and use of education collections, including a K-12 book collection. She explores how information literacy and pedagogical strategies, such as ePortfolio and flipped classroom techniques, engage students. She also researches child and teacher engagement with children's literature and the roles that language and identity play. She is chair of New York City Schools Library Services Council and board member and chair of the library committee of the Maxine Greene Institute.

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Appendix

Sample Coding Chart for the Frame Research as Inquiry

Knowledge Practice: Monitor gathered information and assess for gaps or weaknesses

Evidence	Participant Text/Speech	Rationale
Complete	"Most of the articles were focused on elementary students" (Andrea, webinar)	Reviews articles and determines that there is a gap as most of the research focuses on children in elementary schools.
Partial	"And in my initial searches, I just, I couldn't find assessment. I couldn't find supporting articles for ELLs in the classroom. And I asked myself, 'What am I doing? Am I asking the right question?'" (Elias, webinar)	Does mention monitoring gathered information, but from the perspective of the discovery and search process rather than gaps in the literature.
None	N/A (Andrea, written ePortfolio)	No mention of gaps or weaknesses in gathered information.

Developing Self-Directed Learners Through an ePortfolio Peer Consultant Program

Joanne Britland
University of Virginia

This case study looks at the implementation of an extracurricular program, the ePortfolio Peer Consultants (ePPC) peer-mentoring technology group, as a part of an ePortfolio project at the University of Virginia and its impact on the development of ePortfolio skill sets. Specifically, we seek to understand if and how the participation in this program has fostered autonomy and self-directed learning among the peer consultants. The study examines multiple sources of data, collected iteratively over three semesters, including the results of a focus group, a survey, interviews, and media sources, such as videos and ePortfolios. Results suggest that the ePPC program fosters self-directed learning linked to ePortfolio use. The study sheds light on innovative ways to utilize ePortfolio peer mentoring in an extra-curricular capacity in order to cultivate self-directed, autonomous learners.

A primary goal in education is to create meaningful, authentic, and significant learning experiences designed to shape lifelong learners (Brown & Thoroughman, 2017; Candy, 1991). Scholarship has established that in the classroom, ePortfolios serve as a tool to help promote this type of learning (Association of American Colleges and Universities [AAC&U], 2018; Batson, Watson, Chen, & Rhodes, 2017; Buyarski, Oaks, Reynolds, & Rhodes, 2017; Firdyiwek & Scida, 2014; Yancey & Weiser, 1997; Zeichner & Wray, 2001). This study examines extra-curricular dimensions of an ePortfolio program at the University of Virginia, the Foreign Language Learning ePortfolio Project (FLLeP), and its impact on creating self-directed, autonomous learners. FLLeP executed a large-scale integration of ePortfolios in the university's foreign language classes. In order to provide technical support for foreign language students enrolled in these courses, the project leaders hired students who had prior experience with ePortfolios in the program's pilot year to serve as technology peer mentors, known as ePortfolio Peer Consultants (ePPCs). Although the ePPCs served in an extra-curricular capacity and were not enrolled in courses utilizing ePortfolios, evidence suggests that they also achieved some of the learner-centered goals driven by the ePortfolio, such as self-directed learning. This study examines the case of these ePPCs and discusses how the principles of ePortfolios promoted self-directed and autonomous learning beyond the classroom and into extra-curricular components of the ePortfolio program.

Rationale

One of the primary objectives of the implementation of ePortfolios is to create a *meaningful* learning experience that can extend into a student's future life and career (Brown & Thoroughman, 2017; Hubert, 2016). As Candy (1991) pointed out, "Lifelong learning takes, as one of its principal aims, equipping people with skills and competencies required to continue their own 'self education' beyond the end of formal schooling" (p. 15). As a result, in order to encourage the development of lifelong learners, there has been an increased emphasis on a learner-centered approach as opposed to a teacher-centered focus in the classroom (Candy, 1991; Fink, 2003; Firdyiwek & Scida, 2014; Grow, 1991; Holec, 1979; Little, 2007, 2009). One of the ways a learner-centered pedagogy has been facilitated is through the inclusion of technology in the curriculum. As Firdyiwek and Scida (2014, p. 116) noted:

> The shift from a teaching paradigm to a learning paradigm in education (Barr & Tagg, 1995) changes not only the roles teachers and learners play, but also the role of technology, as well as the role of those who shape and support technology integration in education. Today, teaching technologies are not just repositories of information or passive delivery mechanisms of static packaged course material (Batson, 2011), but play a significant role in helping us with the difficulties inherent in the paradigm shift we are experiencing, in which monitoring and responding to learners' progress becomes just as important as, if not more important than delivering instructional content and assessing students' final products (Cambridge, 2010).

Technology plays a pivotal role in providing students with ways to become self-directed learners. Correspondingly, the FLLeP project integrated ePortfolios into the foreign language classroom with a key goal to "empower students to become more independent, active, self-directed learners, aware of their own progress and learning styles, and equipped with tools for lifelong learning" (Scida, James, & Firdyiwek, 2016, p. 31).

The initial objectives of the ePortfolio implementation were designed to impact students enrolled in foreign language courses. However, the influence of ePortfolios extended into another component of the program: the ePortfolio peer consultants. The ePPCs served as peer mentors to students enrolled in foreign language courses using ePortfolios. By providing technical assistance, they were a critical factor in encouraging students to become more self-directed and autonomous learners, empowering them with both knowledge and practical skills necessary to design their individual ePortfolios for their classes. Their preliminary role was designed as a supplementary element to the overall program geared towards a student-centered learning approach. By giving the students who worked as ePortfolio peer consultants the freedom to work with and learn about technology, these peer consultants, in turn, became motivated to learn new skills independently. This phenomenon adds an unexpected layer to the FLLeP model designed to promote self-directed learning for students in courses. Building upon the groundwork established in a 2016 study about FLLeP (Scida et al., 2016), this article examines another dimension of the project. It analyzes how an extra-curricular component derived from the ePortfolio program also achieves the goals of shaping an autonomous, self directed-learner in the peer consultants themselves.

Theoretical Framework

Researchers have noted that self-directed learning is an important factor in creating meaningful learning experiences (Candy, 1991; Fink, 2003; Grow, 1991). As Fink (2003) pointed out, some of the principle objectives of this type of learning include "enhancing our individual life, enabling us to contribute to many communities of which we will be a part, and preparing us for the world of work" (p. 7). With the need to develop ways to design significant learning experiences, universities and educational programs have employed models to promote self-directed and autonomous learning to give students room to grow and hold more independent roles. These models include several high-impact practices, such as internships, service learning, and undergraduate research, and, as Batson et al. (2017) noted, these "often happen outside of the traditional classroom" (p. 2).

Grow (1991) also provided valuable information about self-directed learning. Viewing it as a process and a goal, he divides the development of a self-directed learner into stages ranging from "dependent learner" to "self-directed learner." His Staged Self-Directed Learning (SSDL) Model, consists of four phases: dependent learners, interested learners, involved learners, and self-directed learners (Grow, 1991, p.

129). Grow underscored that a key objective is to progress from dependency to self-direction. "The goal of the educational process is to produce self-directed, lifelong learners. Many current educational practices in public schools and universities, however, do more to perpetuate dependency than to create self-direction" (Grow, 1991, p. 127). When describing the fourth and final stage of learning, which he refers to as "Learners of High Self Direction," Grow (2003) wrote,

> Learners at this stage are both able and willing to take responsibility for their learning, direction, and productivity. They exercise skills in time management, project management, goal setting, self-evaluation, peer critique, information gathering, and use of educational resources. The most mature Stage 4 learners can learn from any kind of teacher, but most Stage 4 learners thrive in an atmosphere of autonomy. (p. 134)

In a similar way, Candy (1991) also emphasized self-directed learning as both a goal and a process. "The development of self-directed individuals—that is, people who exhibit the qualities of moral, emotional, and intellectual autonomy—is the long-term goal of most, if not all, educational endeavors" (Candy, 1991, p. 19). Candy (1991) discussed the overarching term, *autonomy*, and its different components within the paradigm of developing a self-directed learner.

> It would seem logical that self-management is a subset of the broader domain of self-determination (or, as I will call it in this book, *personal autonomy*). This means that a person who is autonomous would be both willing and able to exert a degree of control over aspects of his or her learning situation, and likewise that the acceptance and exercise of such responsibility would be taken to indicate high levels of personal autonomy. (p. 20)

As mentioned earlier, high-impact practices can promote self-directed, autonomous learning, and the Association of American Colleges and Universities (AAC&U) has listed the ePortfolio as a high-impact practice. The electronic collection of and reflection on materials allows students to demonstrate their learning as part of a continuous and interactive process, and, correspondingly, institutions have implemented the ePortfolio in order to foster deeper student learning and attainment of program learning outcomes (Janosik & Frank, 2013; Scida et al., 2016). The AAC&U (2018) also noted that "because collection over time is a key element of the ePortfolio process, employing ePortfolios in collaboration with other high-impact practices provides opportunities for students to make connections between various educational experiences" (para. 8).

Other related high-impact practices include collaboration and learning communities (AAC&U, 2018). The ePortfolio provides a space that can contribute to collaboration among peers and promote self-regulated learning (Nguyen & Ikeda, 2015). Recent studies have focused on the collaborative nature of the ePortfolio and, more specifically, peer review and peer mentoring, emphasizing that peer review can enhance the ePortfolio product and process (Carpenter, Apostel, & Hyndman, 2012; Ring, 2015). Ring (2015) discussed a peer review program implemented at the University of Clemson, and noted that the feedback provided by peers helped students "develop critical thinking and communication skills. In addition, the iterative nature of the process helps students develop lifelong learning and collaboration skills" (p. 329). Likewise, Carpenter et al. (2012) examined the power of peer collaboration within the ePortfolio context, highlighting its contribution to fostering a student-centered environment (p. 168). Gordon (2017) pointed to the difficulties first-time ePortfolio students may encounter. Her study suggests that peer feedback can help ease initial challenges and bolster the development of skills connected to the ePortfolio, such as reflection and self-regulation (p. 114).

These bodies of scholarship shed light on the collaborative possibilities with the ePortfolio and its creation of a self-directed learner. This article adds to research on peer collaboration and self-directed learning, homing in on how ePortfolio principles impact peer consultants in an extra-curricular setting.

The ePortfolio Peer Consultants

FLLeP was designed to achieve multiple student-centered goals in the classroom, including encouraging the establishment of links between foreign language learning and other academic pursuits, creating awareness of learning processes and goals, and supporting independent, self-directed, autonomous learning (Scida et al., 2016). The project began in 2014. It includes 60 foreign language faculty from seven foreign language departments and 30 beginning, intermediate, and advanced language courses, and encompasses 96 separate class sections, impacting over 3,500 students per semester. Consequently, technical support for such a large faculty and student population was an initial concern. In order to overcome this challenge, the project leaders decided to implement a peer-mentoring model (the ePPC program) focused on technology assistance during the 2015-2016 academic year. This program was comprised of students who worked with ePortfolios in previous courses and were familiar with the ePortfolio platforms Digication and WordPress. In order to be employed as ePortfolio Peer Consultants (ePPCs), the students submitted

applications, were interviewed, and chosen through a selective hiring process. As student employees, they were paid hourly for their services.

Prior to the start of the semester, the ePPCs participated in an orientation session. They were already familiar with the ePortfolio platforms and technology from past coursework; however, the orientation was designed to prepare them to work with ePortfolios in a different capacity: mentoring students and faculty. At the training, students learned how to explain and guide their mentees through the technology platforms. They also received insight regarding common issues that students in courses using ePortfolios have encountered in the past. Part of the ePPCs' duties included class visits at the beginning of the semester to market their group and inform students about their services. During the orientation they were able to plan and prepare for these presentations. The training ensured that the ePPCs were equipped with up-to-date knowledge necessary to provide quality assistance to current students and instructors using ePortfolios in their foreign-language classrooms. During the semester, the ePPCs offered technical troubleshooting support through weekly office hours in the language lab as well as scheduled appointments.

In addition to the initial orientation, the ePPCs participated in weekly meetings to discuss ePortfolio technologies and pedagogical practices, as well as updates about the program. The gatherings facilitated the ePPCs with a space where they could address new technology issues that they had come across or clarify any other doubts related to their position. During the meetings, they were also encouraged to reflect upon and consider the merits and values of ePortfolios. These ongoing conversations provided a valuable opportunity to explore the pedagogies of ePortfolios. Thus, in their capacity as an ePPC these students were able to learn about the principles and benefits of ePortfolios. This aspect differs from their experiences in a classroom where they honed skills related to course content, technology, collaboration, and reflection. The ePPCs sharpened these proficiencies in their mentoring role, but as an ePPC they were also able to learn about the unique features of ePortfolios and, in turn, instill agency into the individual students using them.

Following its initial launch in the 2015-2016 academic year, the ePortfolio peer-mentoring unit has continued to grow and evolve. During the first year, the project leaders hired five consultants who each worked three hours per week during the beginning and end of the semester, providing a total of 15 hours of weekly assistance. The increased hours at the beginning of the semester were due to higher student traffic as a result of initial ePortfolio set-up in foreign-language courses; more hours were available at the end of the semester to aid students polishing their ePortfolios for final

submission. Throughout the rest of the semester, the consultants each worked for two hours per week, offering a total of ten office hours.

The program expanded to seven consultants for the 2016-2017 academic year. These students also provided three hours of assistance per week during peak semester times (21 hours total), and two hours per week during the rest of the semester (14 hours per week). In total, roughly 130 students received assistance from the peer mentors per semester. The ePPCs carried out additional responsibilities during this academic year, as they became the primary organizers of FolioFest, the biannual ePortfolio symposium, which will be discussed in detail. This event showcases the best work of selected students across the College. These duties continued throughout the 2017 and 2018 academic year.

Methodology and Procedures

In this study, I examine multiple sources of data collected iteratively over three semesters (Spring 2017, Fall 2017, Spring 2018). Two key questions are considered: (1) Does the ePortfolio peer-mentoring program foster self-directed learning? (2) What evidence indicates that the ePortfolio has encouraged self-directed learning?

The analysis begins with information from a focus group session conducted with the ePPCs in May 2017 at the end of the Spring semester (see Appendix A). In the focus group, participants discussed their roles as ePPCs and the different ways that they learned about technology. A second piece of evidence incorporates survey results that the ePPCs completed after planning and executing the Fall 2017 FolioFest event in December 2017 (see Appendix B). Other data considered includes (a) media items created autonomously by the consultants during all three semesters that demonstrate self-directed learning, such as their personal ePortfolios; (b) video tutorials for the FLLeP project; and (c) promotional videos for the ePPC program. A final source of data stems from interviews with the ePPC faculty coordinators at the end of the Spring 2018 semester.

Results

Focus Group Responses

The first data to discuss is the initial focus group session held at the end of the Spring 2017 semester in May with the ePPCs regarding the different ways that they learned about ePortfolio technology (see Appendix A). An analysis of their responses indicates that the ePPCs were indeed motivated to become (or were) self-directed learners. The consultants overwhelmingly expressed that they learned many ePortfolio technical skills independently. Although they had knowledge of ePortfolio technology from prior coursework and their orientation training, unexpected technology issues arose frequently and required them to learn concepts and problem-solving techniques individually. As one student pointed out, these situations challenged and motivated them: "I like it when there is an issue that is not necessarily something that I've gone through a bunch of times before, and then I can work it out and do the problem solving." The student went on to say how "personally gratifying" the process was for her. Another student noted the importance of learning by doing "because you'll remember it and how to fix it if you do it yourself, instead of being told 'this is how you fix it.'" A consultant touched on the need to be prepared for anything because "there are so many problems that come up anyway that there is no way you could get an orientation course that covers all of it." Similarly, another participant said, "I don't think an orientation or any sort of short course or module taking you through WordPress or Digication would be able to substitute for just going through it and seeing what problems you come up against." As another student put it succinctly, "A lot of my skills I had to learn independently."

In addition to fostering learner autonomy, the students mentioned other benefits of the peer-mentoring program such as the acquisition of proficiencies in troubleshooting, customer service, teaching skills, and peer collaboration, all within the context of an authentic employment experience that point to the development of a self-directed, life-long learner.

FolioFest Survey

Another indication of independent, self-motivated actions taken by the students comes from a survey conducted after the 2017 Fall FolioFest in December 2017 (see Appendix B). As previously mentioned, FolioFest is the college-wide symposium where selected students showcase their ePortfolios to the university community. Initially, the FolioFest was organized and facilitated by FLLeP faculty. In 2017, however, the responsibilities were shifted to the consultants. According to the ePPC faculty coordinators, this was motivated by two factors. First, one of the original intentions of the ePortfolio project centered on the promotion of student leadership. As Gordon (2017) noted, a powerful benefit of the ePortfolio is that it makes the student a "participant rather than a mere observer" (p. 114). The ePPCs' leadership role in FolioFest, then, emerged from the inherent nature of the ePortfolio. Giving the ePPCs responsibility for the event demonstrated a way to showcase the program as not just a technical support unit, but as a group that serviced the ePortfolio process as a whole. As a result, FolioFest became an integral

part of the ePPCs' duties. The peer consultants were responsible for implementing the event with tasks ranging from distributing invitations and arranging catering, organizing the sequence of the FolioFest schedule, to reviewing the ePortfolios to be presented and selecting exemplary student work to be showcased. Furthermore, the ePPCs publicized the event across the university community to ensure a high level of enthusiasm and participation.

In order to assess the decision to expand the student-centered role of the ePPCs, the ePPC coordinators collected survey responses from the ePPCs after the Fall 2017 FolioFest. The consultants responded to four questions about the value of the duties they had been given. The questions were designed to look at how the ePPCs perceived the significance of their responsibility, how they developed their understanding of ePortfolio principles, what impact they saw the project having on the institutional community, and how they saw its influence on themselves as an extracurricular activity.

The themes that emerged from their responses added to the clarification of the setup of the ePortfolio program. The first question, "Is it important for FolioFest to be organized and run by students?", sheds light on the students' view of student-centered learning. The ePPCs were able to explain their unique role in building the ePortfolio program. One student noted,

> When students plan and run FolioFest, the event naturally becomes student-centered and this highlights a major theme of portfolio-making, student-centric learning. To align with this theme of portfolio-making in an event designed to showcase them only makes sense. This makes everything come together perfectly.

The consultants viewed a logical link between ePortfolios as a student-centered activity and the importance of their role as ePPCs in coordinating the FolioFest event. As one student put it,

> For FolioFest to be organized and run by students contributes to the argument that ePortfolios are meant to contribute to students' educational and professional pursuits. Additionally, as ePortfolios are created by students—and as the peer consultants are students themselves—I think it's important for an event meant to celebrate ePortfolios also be created by students.

Another participant added, "It seems natural that the environment best suited for accomplishing these goals would be an environment structured by students themselves." These comments suggest that the ePPCs are aware of the student-centered approach to learning.

The consultants' answers emphasize that through self-directed learning, the students become prepared for the real, professional world.

In response to the question, "How did the FolioFest further develop your understanding of ePortfolios?", the students listed technical and pedagogical areas that had become clearer to them through the experience of implementing FolioFest.

> My understanding (of ePortfolios) also branched out from viewing e-portfolios as a great tool for language classes. FolioFest gave me the opportunity to view e-portfolios that were used for art, teaching a hobby, or journaling and blogging. The various ways you can use e-portfolios is incredible.

Another consultant stated, "I was under the impression that ePortfolios were mainly used in English and language classes, but to my surprise there are ePortfolios being used in the Chemistry department."

Answers to the question, "How do you think an activity like FolioFest helps the development of ePortfolios at this university?", highlighted that consultants perceive the event as one that promotes collaboration among students and generates interest in ePortfolios at the university. One student noted,

> FolioFest allows students to exchange ideas and enrich their knowledge of portfolios. This, ultimately, equips them to implement new and fresh ideas to future portfolio-making endeavors. FolioFest provides an environment to reignite a student's interest in developing their existing portfolios and making new ones.

Many of the ePPCs suggested that the event promotes creativity and demonstrates the versatility of ePortfolios. As one student responded,

> FolioFest emphasizes that ePortfolios not only have academic and professional purposes, but can help facilitate and document one's creative process. Students don't often get to see what their peers are doing outside of class and FolioFest gives them an incentive to explore their ePortfolio options outside of their instructor's template, syllabus, course outline, etc.

This particular comment accentuates the connection between FolioFest, its contribution to creativity and the subsequent drive to "explore their ePortfolio options *outside* of the instructors' template." It underscores the development of a self-directed and motivated learner within the paradigm of the ePortfolio program.

The last question, "How does running an event like FolioFest enhance your extra-curricular education?", generated responses that point to the fostering of life-

long learners and the honing of skills that are applicable to a real-world context. One student stated, "Running an event like FolioFest enhanced my extra curricular education by giving me the opportunity to hone various leadership, communication, and organizational skills that are widely applicable in a variety of settings." Other answers to this question indicate that the consultants learned from the challenges of the experience, citing difficulties that arose, as well as the need to plan for future events. As a consultant expressed,

> I must say, being in charge of FolioFest was a bit more difficult than I had originally imagined. There are so many details that are necessary for the success of the event, which in turn calls for a lot of key decisions to be made by several different people with different visions on how the event should be. However, I think that the ePPCs did a stellar job with compromising and dedicating ourselves to this event. It was a lot of fun working with them and seeing all of our hard work finally come together. Lastly, we as ePPCs stress self-reflection throughout one's work. I must include that FolioFest has made me reflect on how we should improve for future FolioFests to come.

These additional findings demonstrate that the peer-mentoring program fosters the attainment of ePortfolio-driven skills in a student-centered dynamic. They also reveal the benefits students receive when given the opportunity to view the final ePortfolio product in a public setting, witnessing how the peer-technology mentorship contributed to its success. Through their direct involvement with FolioFest, they were able to connect the benefits of creating ePortfolios with the real world, another example of transcending classroom boundaries. The responses also suggest a growing attainment of reflection skills and teamwork linked to the ePPC program.

More importantly, FolioFest allows students to take ownership of the ePortfolio program at the university. It is a student-led event that is not simply bestowed upon them, rather, it flows naturally out of the principles of ePortfolios. The ePortfolio is a vehicle that encourages student agency in the learning process; FolioFest is another manifestation of agency and group collaboration within the paradigm of ePortfolio use.

Additional Evidence

Supplemental evidence supporting the hypothesis that the program promotes self-directed learning derives from artifacts created by the ePPCs themselves. It is important to point out that the ePPC faculty did not require the students to carry out these tasks, rather, the ePPCs autonomously sought out the opportunities.

Independent ePortfolios. A prime example includes the individual ePortfolios that the consultants created independently. Each consultant designed a personal ePortfolio on Digication. One consultant fashioned a professional ePortfolio including her resume, university and high-school course work, and professional goals. She also describes her experiences as a student at the university in an embedded video where she highlights the strengths and skills that she can contribute to a future career. This particular example links to Fink's (2003) argument that ePortfolios prepare students for the professional world.

Another consultant created an ePortfolio that focuses specifically on her position as an ePPC. She explained the role that ePPCs play in the overall ePortfolio program and detailed the importance of ePortfolios in a video that she recorded and embedded. In the video, she pointed out the benefits of using ePortfolios in and outside of the classroom, such as viewing educational and professional growth, honing creativity skills, and interacting with other students. She noted that ePortfolios allow students to "form a community to come together and learn, be creative, and make our ePortfolio our own, which I think is very important."

One ePPC's portfolio showcased her experiences with ePortfolios both in the Spanish classroom and as an ePPC. She mentiond useful aspects of the ePortfolio, citing collaboration with other students. She also emphasized that ePortfolios allow students to hone proficiencies in technology and leadership. In a video that she embedded in the portfolio, she said, "I know that these skills won't only help me in school, but also will help me succeed in the future." Her comments suggest that she recognizes the importance of these abilities within the university setting but also noted that they are skills that can aid in future endeavors, a primary indicator of meaningful and self-directed learning.

These individual portfolios also suggest individual student growth as a result of their engagement with ePortfolio technology. As Firdyiwek and Scida (2014) pointed out, ePortfolio technology encourages reflection (p. 128). In the ePPC portfolios, many of the students reflect on their role as an ePPC, underscoring their enthusiasm for the position as well as the benefits of ePortfolios that they have observed. These individual portfolios also serve as another outlet for self-directed learning where consultants can explore the technology and experiment with new design capabilities and layouts.

Informational videos. Other examples of self-directed, autonomous learning are tutorial and informational videos about the ePPC program generated by the consultants, individually and collaboratively. During the 2017 spring semester, one ePPC recorded a tutorial video about the benefits of ePortfolios. The student shared this video with the FLLeP team, and it was later posted on the FLLeP website for other

students and instructors to consult. In the video, the ePPC discusses her personal ePortfolio that she had previously developed as a student in the French program. She focused on the professional aspects of the ePortfolio, mentioning that she could use the links from her ePortfolio to send to potential employers to "showcase my reading, verbal, and writing skills." She gave personal advice to future students using ePortfolios, encouraging them to take advantage of the ePortfolio and the resources offered within the foreign language program. The student also pointed out the creative and design possibilities of ePortfolios, highlighting that learning how to utilize ePortfolio platforms is a valuable skill to have not only in the classroom but possibly in a future career.

A second piece of media evidence is a video that the ePPCs recorded together for the 2017 FolioFest. In the video, they interviewed members of the FLLeP program, instructors, and students using ePortfolios. They considered the versatile aspects of the ePortfolio, underscoring its significance both in and outside of the classroom. One ePPC said,

> It's a really beautiful thing when you start something, and then you look back and see how much you actually grow. You can look at your past work and see how you can become better in the future. I think that is one of the goals of ePortfolios to see how you can grow and progress.

Her comment alludes to a growing awareness of the reflective components that come with using ePortfolio technology.

These media artifacts, created autonomously by the ePPCs, are authentic indicators of self-directed and self-motivated learning. They point to several skills that link to the most advanced self-directed leaner (Stage 4) from Grow's (1991) model. They demonstrate evidence of "time management, project management, self-evaluation, peer critique, information gathering, and use of educational resources" (Grow, 1991, p. 134). Furthermore, the content of their ePortfolios and videos suggests a growing development of skills related to autonomy and reflection on educational and professional growth.

Interviews with ePPC faculty coordinators. A final component of this study includes an interview with the ePPC faculty coordinators conducted at the end of the 2018 Spring semester following the FolioFest event. One of the purposes of this conversation was to confirm the rationale for creating the ePPC program and what led to the decision to give students greater autonomy with FolioFest. One coordinator noted that the ePPCs were hired initially as a support unit, but it became clear that their role transcended that function. He said,

Once the program was established, however, and we saw how readily the students took to helping their peers (including creating, without any prompting from us, tutorials and promotional material), it was quickly apparent that the program was actually a "teaching moment"—one in which the students were teaching themselves.

The progress of the ePPCs led the coordinators to designate more responsibilities to them, primarily managing FolioFest. As one faculty member noted,

> At first, we did not give the ePPCs full autonomy to run FolioFest. I and other staff members helped them with program decisions and management of the budget. When we surveyed them after the program, however, their responses showed a deep understanding of their role and an appreciation of the chance we gave them to be the "student face" of ePortfolios at the university. Based on that, we committed to giving the students full autonomy on the FolioFest we held this past spring.

The interviews also shed light on challenges and limitations of the program. However, they emphasized that these are not taken as "failures" but rather as evidence of authentic student work. One example stems from an observation at the 2018 FolioFest, an event that the ePPCs independently organized and successfully carried out. According to the ePPC coordinators, there were signs that the students had not adequately prepared for the use of technology, apparent through a glitch that prevented the students from publically showcasing an ePPC promotional video they had designed. One the one hand, the setback is positive in the sense that it demonstrated a truly student-run, self-directed event, underlining the authenticity of it; nevertheless, it also suggests that there were areas for improvement.

The coordinators cited another example of challenges that can arise with a completely student-centered program. In the initial year of the program, one ePPC often arrived late to office hours and was once even found sleeping on the job. Although this has been the only case of this nature, it is an instance that demonstrates that some students may require extra guidance in order to lead them through the process of becoming self-directed learners.

Discussion and Conclusion

This article discusses the University of Virginia's FLLeP ePortfolio peer consultant group, centering on an extra-curricular dimension of the implementation of ePortfolios. An analysis of multiple sources of data indicates that the students working as ePPCs developed skills to become self-directed learners and were also

motivated to learn and seek new opportunities through the ePortfolio, demonstrating a significant and meaningful learning experience. Their efforts to learn more on their own are a demonstration of Candy's (1991) findings. The students took control over their own learning situation in efforts to improve their own knowledge and help their peers and professors with ePortfolio technology.

The results of this study support the goals of a student-centered learning approach connected to ePortfolio implementation. This particular peer-consultant program enables students to take charge of their learning in realms outside of the immediate classroom and become responsible for their individual knowledge. The ePPCs acquired many of their technology skills independently, indicating that they were motivated to be self-directed learners. Other significant evidence of self-directed learning derives from the FolioFest survey results. The responses demonstrate that the ePPCs value a completely learner-centered approach to education and recognize several benefits of utilizing ePortfolios, such as personal growth and collaboration. FolioFest in particular echoes the benefits of high-impact practices, and more specifically collaboration and learning communities, detailed by the AAC&U. These particular developments of other abilities are also rooted in some the principles of ePortfolios, such as reflection and leadership.

Furthermore, the survey data reveals the establishment of links between ePortfolios and the student-centered approach in realms beyond the classroom environment, such as transferring ePortfolio skills to future careers. The supplementary artifacts, such as the tutorial and promotional videos, as well as individual ePortfolios created by the ePPCs also point to meaningful and self-directed learning, as the students produced them without faculty prompting.

Although these findings are positive, there are areas for development and improvement. The ePPC members demonstrated signs of self-directed learning, but some indicators suggest that they were experiencing, as Candy (1991) suggested, a growing process, as highlighted in the interviews with the ePPC faculty coordinators. Despite some of the challenges cited by the coordinators, the student-run aspect of the program yielded positive results and denoted the attainment of self-directed learning skills in an extracurricular dimension of the ePortfolio program. These findings also suggest directions for future studies. Several pieces of evidence, such as the FolioFest survey responses and individual ePortfolios and videos, reveal the establishment and development of additional skills born out of the ePPC program. Next steps in this study might evaluate other components of a learner-centered approach, such as reflection and leadership. Furthermore, as a result of the significant

responses regarding self-directed learning and its link to FolioFest, future studies might also continue to monitor the student-led event. Another consideration would be collaborating with other universities with similar programs. For example, the ePPCs could expand FolioFest and invite students from other institutions to participate and present on their work. This would facilitate more opportunities for student autonomy and leadership by allowing them to plan and execute an inter-university ePortfolio conference.

The University of Virginia ePPC program continues to expand and evolve. Each year of the program provides new insight into ways to improve it in order to develop and foster self-directed and meaningful learning experiences. Research should continue in order to shed light on the benefits of the ePPC program, as well as innovate and determine possibilities for more collaborative and student-led initiatives.

References

Association of American Colleges and Universities (AAC&U). (2018). *High-impact educational practices.* Washington, DC: Author. Retrieved from https://www.aacu.org/sites/default/files/files/LEAP/HIP_tables.pdf

Batson, T., Watson, C., Chen, H., & Rhodes, T. (2017). Introduction. In K. Coleman & A. Harver (Eds.), *Field guide to ePortfolio* (pp. 1-6). Washington, DC: AAC&U.

Brown, G., & Thoroughman, K. (2017). Authentic learning: ePortfolios across the divide. In K. Coleman & A. Harver (Eds.), *Field guide to ePortfolio* (pp. 25-31). Washington, DC: AAC&U.

Buyarski, C., Oaks, S., Reynolds, C., & Rhodes, T. (2017). The promise of ePortfolios for student learning and agency. In K. Coleman & A. Harver (Eds.), *Field guide to ePortfolio* (pp. 39-45). Washington, DC: AAC&U.

Candy, P.C. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice.* San Francisco, CA: Jossey-Bass.

Carpenter, R., Apostel, S., & Hyndman, B. (2012). Developing a model for ePortfolio design: A studio approach. *International Journal of ePortfolio*, *2*(2), 163-172. Retrieved from http://www.theijep.com/pdf/IJEP66.pdf

Fink, L. D. (2003). *Creating significant learning experiences.* San Francisco, CA: Jossey-Bass.

Firdyiwek, Y., & Scida, E. (2014). Reflective course design: An interplay between pedagogy and technology in a language teacher education course. *International Journal of ePortfolio*, *4*(2), 115-131. Retrieved from http://www.theijep.com/pdf/IJEP125.pdf

Gordon, L. (2017). Students as co-designers: Peer and instructional resources for novice users of

ePortfolio. *International Journal of ePortfolio*, *7*(2), 113-127. Retrieved from http://www.theijep.com/pdf/IJEP279.pdf

Grow, G. (1991). Teaching learners to be self-directed. *Adult Education Quarterly, 41*(3), 125-149. doi:10.1177/0001848191041003001

Holec, H. (1979). *Autonomy and foreign language learning.* Strasbourg, France: Council of Europe.

Hubert, D. (2016). ePortfolios, assessment, and general education transformation. *Peer Review*, *18*(3), 25-28.

Janosik, S., & Frank, T. (2013). Using ePortfolios to measure student learning in a graduate preparation program in higher education. *International Journal of ePortfolio*, *3*(1), 13-20. Retrieved from http://www.theijep.com/pdf/ijep99.pdf

Little, D. (2007). Introduction: Reconstructing learner and teacher autonomy in language education. In. A. Barfield & S. H. Brown (Eds.), *Reconstructing autonomy in language education* (pp. 1-12). New York, NY: Palgrave Macmillan.

Little, D. (2009). Language learner autonomy and the European Language Portfolio: Two L2 English examples. *Language Teaching*, *42*(2), 222-233. doi:10.1017/S0261444808005636

Nguyen, L. P., & Ikeda, M. (2015). The effects of ePortfolio-based learning model on student self-regulated learning. *Active Learning in Higher Education, 16*(3), 197-209. doi:10.1177/1469787415589532

Ring, G. (2015). Implementing a peer mentoring model in the Clemson ePortfolio program. *Theory Into Practice*, *54*, 326-334. doi:10.1080/00405841.2015.1077616

Scida, E., James, K., & Firdyiwek, Y. (2016). E-portfolios for assessment of student learning in world language programs. *Language Educator 11*(2), 30-34.

Yancey, K. B., & Weiser, I. (Eds.). (1997). *Situating portfolios: Four perspectives*. Logan, UT: Utah State University Press.

Zeichner, K., & Wray, S. (2001). The teaching portfolio in US teacher education programs: What we know and what we need to know. *Teaching and Teacher Education, 17*(5), 613-621. doi:10.1016/S0742-051X(01)00017-18

Joanne Britland, Ph.D., has taught Spanish, Portuguese, and English in Spain, Brazil, and the United States at the university and high school levels. She bridges her field of language, literature, and culture with her interests in teaching by conducting research on foreign language pedagogy, technology integration, and high-impact practices such as ePortfolios and global learning. As Project Manager from 2015-2018 for UVa's Foreign Language Learning ePortfolio (FLLeP) Grant Project, she helped design and manage e-learning programs that were implemented on a large scale. She also served as Coordinator for UVa's ePortfolio Peer-mentoring Consultant (ePPC) program. Contact: jeb5hc@virginia.edu

Appendix A

Spring 2017 Focus Group Questions

- How has being an ePPC helped you learn more about technology?

- What other skills did you acquire as a result of working as an ePPC?

- In which ways do you feel that you've helped the students that have consulted you in office hours?

- What did you most like about your job?

- What did you least like about your job?

Appendix B

Fall 2017 FolioFest Survey Questions

- Is it important for FolioFest to be organized and run by students?

- How did FolioFest further develop your understanding of ePortfolios?

- How do you think an activity like FolioFest helps the development of ePortfolios at this university?

- How does running an event like FolioFest enhance your extra-curricular education?

Modeling High-Impact ePortfolio Practice: A Review of *Catalyst in Action: Case Studies of High-Impact ePortfolio Practice*

Susan Kahn
Indiana University-Purdue University Indianapolis

This article reviews *Catalyst in Action: Case Studies of High-Impact ePortfolio Practice*, edited by Bret Eynon and Laura Gambino. A follow-up to the authors' earlier volume, *High-Impact ePortfolio Practice: A Catalyst for Student, Faculty, and Institutional Learning* (Eynon & Gambino, 2017), the new book presents a series of 20 case studies focused on various aspects of ePortfolio practice but with a particular emphasis on pedagogy and professional development. The chapters represent a highly diverse group of institutions, from community colleges to small private institutions to large public and private research universities. The various case studies presented are informative and even inspiring, providing a formidable body of evidence supporting the potential value of ePortfolio practice for students, programs, and institutions and attesting to the growing sophistication of ePortfolio research approaches, pedagogical strategies, and professional development practices. *Catalyst in Action* is highly recommended to longtime ePortfolio leaders and practitioners as well as to those new to the field. Publisher: Stylus (Sterling, VA, 2018). ISBN: 9781620368671. List price: $35.00 (U.S.). 380 pages.

The 2017 publication of Bret Eynon and Laura Gambino's *High-Impact ePortfolio Practice: A Catalyst for Student, Faculty and Institutional Learning* marked a turning point in the ePortfolio field. Based on the results of a three-year, 24-campus national project, the book presented compelling evidence for three "Value Propositions" posited by the authors: briefly, that well-designed and well-executed ePortfolio projects—"ePortfolio done well"— advance student success; support reflection, integration of learning, and deep learning; and catalyze learning-centered institutional change. The volume further delineated a five-part framework, the Catalyst Framework, for doing ePortfolios well and a proposed set of design principles, Inquiry-Reflection-Integration, for effective implementation of the framework.

Eynon and Gambino's (2017) ambitious study had its own immediate high impact: it persuaded higher education scholar George Kuh, author of the Association of American Colleges & Universities' influential 2008 monograph, *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*, to recognize ePortfolios "done well" as the eleventh high-impact practice (HIP) in higher education (Kuh, 2017). This recognition had the further impact of legitimizing ePortfolios in the minds of some skeptics (on my campus and, I suspect, on others) and of situating ePortfolios primarily as a powerful teaching and learning approach, rather than as another assessment tool or instructional technology fad. The book quickly became required reading for ePortfolio leaders and practitioners, offering guidance that confirmed lessons that leaders of long-established ePortfolio initiatives had learned through trial and error and mitigating the need for new practitioners to "reinvent the wheel."

Now Eynon and Gambino have followed up with a new volume, *Catalyst in Action: Case Studies of High-Impact ePortfolio Practice* (2018), an edited collection that explores in greater detail what it means to do ePortfolio well. Each of the case studies presents a detailed description of a well-developed current ePortfolio practice related to one or more of the five Catalyst Framework components: integrative social pedagogy, professional development, outcomes assessment, technology, and scaling up (Eynon & Gambino, 2017). Case study authors also connect the development and refinement of the practices they spotlight to the Inquiry-Reflection-Integration principles (retroactively, in some instances) and provide evidence of the practices' impact in relation to the three Catalyst Value Propositions.

Taken together, the 20 case studies in the collection present a diverse set of exemplary, and often inspiring, ePortfolio practice models and a formidable body of evidence supporting the potential value of ePortfolio practice for students, programs, and, to a somewhat lesser extent, institutions. A striking feature of several of these studies is the rigor and sophistication of their research approaches in comparison to studies conducted even a few years ago. As Eynon and Gambino note in the epilogue, these institutions have gone beyond comparing outcomes of students who create ePortfolios with those who do not. A study conducted at Bronx Community College offers an illustrative example: the college created a year-long, peer-mentored faculty development seminar focused on ePortfolio pedagogy, HIPs, and course re-design. Among other purposes, the seminar aimed to use ePortfolios to support a shift in course focus away from traditional information transmission and toward fundamental concepts, reflection, and metacognition. Then researchers compared student outcomes for First-Year Seminar

sections taught by seminar participants to outcomes for students taught by faculty with much more limited exposure to ePortfolio professional development and faculty who had no ePortfolio training. The results showed dramatic differences between the groups taught by seminar participants and the other two groups in pass rates for the course, retention to the following semester, and average credits earned in the first semester (Getman-Eraso & Culkin, 2018). Other institutions represented in the volume report similarly significant gains from carefully implemented ePortfolio pedagogy, sometimes using advanced statistical analysis techniques.

The Bronx Community College example (Getman-Eraso & Culkin, 2018) highlights the key role of sustained professional development and thoughtfully planned and executed pedagogical approaches that place ePortfolios at the center of course and curriculum design. These emphases, which will resonate with the experience of long-time ePortfolio leaders, typify many of the well-developed and rigorously honed practices included in this collection. At the same time, the diversity of models for scaling professional development and incorporating ePortfolios speaks to the importance of adapting ePortfolio implementation strategies to campus type and culture. It is one thing to adopt and scale ePortfolios at a small private college or within a single program; it is quite another to do so across a large comprehensive campus or public flagship university. (For this reason, I have always found the third Catalyst Value Proposition—that "ePortfolio done well catalyzes learner-centered institutional change" [Eynon & Gambino, 2018, p. xxii]—somewhat problematic. I have yet to see an example of effective ePortfolio adoption across a large university.)

The University of South Carolina, for example, developed its own model for scaffolding and scaling both faculty/staff and student learning from and about ePortfolios (Van Scoy, Fallucca, Harrison, & Camp, 2018). The campus's Graduation with Leadership Distinction (GLD) recognition was created to encourage student participation in experiences like community service, global learning, and research, and to support integration of these out-of-class experiences with course-based learning. The recognition, which appears on students' transcripts, requires a one-credit senior capstone seminar in which students work with peers and mentors to complete reflective, integrative ePortfolios that demonstrate their accomplishments and capacities. Faculty and staff participate at several successive levels: first, as trained evaluators of students' capstone ePortfolios; next, as mentors to small groups of seniors as they create and refine their ePortfolios; and, finally, as capstone seminar instructors. As faculty and staff learn to evaluate and then facilitate student reflection on and integration of learning in ePortfolios, they become

ambassadors to their disciplinary departments and programs, seeding ePortfolio practice across the university (Van Scoy et al., 2018).

The South Carolina GLD program thus aimed to enhance student and faculty learning, and to widen campus adoption of ePortfolios and reflective, integrative pedagogies within departments and programs. It is within disciplinary programs, Eynon and Gambino (2018) find, that the "emphasis on coherence" (p. 288) essential to high-impact ePortfolio practice has been most easily and often enacted. Many of the case studies in *Catalyst in Action* are drawn from disciplinary majors and graduate programs where faculty can work collaboratively to "design longitudinal ePortfolio practices, spanning multiple semesters, helping students recursively examine their experiences and build academic and professional identities" (Eynon & Gambino, 2018, p. 288) and where "the powerful resonance between integrative curriculum and pedagogy, on the one hand, and integrative ePortfolio-enhanced learning on the other" (2018, p. 289) is most often realized. Experience at my own university suggests that program-level ePortfolio adoption can often stimulate faculty collaboration to develop more purposefully integrative and sequenced curricular and pedagogical designs. In this collection, case studies from institutions as diverse as LaGuardia Community College, Elon University, Northeastern University, and the University of Waterloo in Toronto describe approaches to aligning curricula and pedagogy with reflective, integrative ePortfolio learning.

All five components of the Catalyst Framework are addressed by the ePortfolio initiative at Salt Lake Community College (SLCC; Hubert & Dibble, 2018). SLCC has scaffolded required ePortfolio development across its general education program, leveraging resources to support students and faculty with extensive virtual and physical infrastructure: comprehensive web resources and examples, drop-in ePortfolio labs, peer mentors for both faculty and students, and faculty workshops and boot camps centered on ePortfolio pedagogy and technology. In addition, the SLCC ePortfolio initiative has pursued a careful strategy to embed ePortfolio assessment in the curricular review process for general education courses. Thus, when courses came up for periodic re-approval for inclusion in the general education program:

> The faculty who shepherd courses through the committee have to address questions about signature assignments, reflective pedagogy, and ePortfolio integration in the course (so it is not just an add-on to an otherwise unchanged course). . . . The committee has a vibrant discussion of ePortfolio pedagogy in each course up for review. This has been nothing short of transformational in

terms of promoting ePortfolio culture among faculty. . . . ePortfolio implementation has, in fact, catalyzed learning-centered institutional change. (Hubert & Dibble, 2018, pp. 205-206)

As we saw at the University of South Carolina, faculty involved in this process become ePortfolio advocates in their home academic departments once they understand how ePortfolio practice can result "in greater student intentionality and engagement" (Hubert & Dibble, 2018, p. 200) in their learning and enhance "students' sense of ownership of their education [and] ability to demonstrate progress toward attaining learning outcomes" (p. 207). And, importantly, ePortfolio practice is embedded in SLCC's tenure and promotion processes. As virtually all of these case studies demonstrate, effective ePortfolio practice demands collaboration and a substantial time commitment. Faculty are more likely to devote such effort when they can expect to be rewarded for it.

Each of the case studies, which make up the book's 20 chapters, follows a consistent format including (a) a brief introduction, (b) description of the institution, (c) description and discussion of the highlighted practice and its relationship to one or more Catalyst Framework sectors, (d) discussion of connections to other Catalyst Framework components, (e) evidence of impact related to one or more of the Catalyst Value Propositions, (f) lessons learned, and (g) a conclusion. In many cases, the practices described were so carefully designed, comprehensive, or creative that I wished the format allowed for more information on their background or history, comparison between the initial vision for a given practice and its eventual realization, and barriers encountered and overcome along the way.

As I reviewed the case studies in this volume, I was struck by several recurring themes:

- ePortfolio technology, while clearly essential to ePortfolio practice, is no longer as strong a focus of attention or the source of as much frustration as it was five or 10 years ago. Only a few case studies give extended attention to ePortfolio technology and only one, Dublin City University, makes it a major focus (Donaldson & Glynn, 2018). If anything, many campuses seem to be moving away from commercial ePortfolio platforms toward web development tools that meet students' expectations that their ePortfolios will "represent their efforts in a visually compelling and professional way" (Goodwin & Lithgow, 2018, p. 165). Elon University is one of several in the book that allows students to select their own platforms, but requires them "to articulate their rhetorical

rationale for choosing one platform over the other, making the selection of an ePortfolio platform part of students' demonstration of integrated learning" (Moore, Pope-Ruark, & Strickland, 2018, p. 175).
- ePortfolio assessment is moving toward a more holistic model. The early days of ePortfolio assessment were typified by a focus on isolated artifacts associated with specific outcomes or competencies. In the 2000s, leading ePortfolio researchers Darren Cambridge (2010) and Kathleen Yancey (2004), among others, urged practitioners to consider ePortfolios not as collections, but as integrated compositions, and to teach students to approach their ePortfolio as a unified narrative of learning and identity. This approach supports integrative student learning and coherent self-representation and enables nuanced assessment of more complex forms of thinking and of what Kuh, Gambino, Bresciani Ludvik, and O'Donnell (2018) termed *dispositional skills*.
- The role of ePortfolios in supporting academic, professional, and personal identity development has been a central theme of ePortfolio research and practice, and it recurs throughout the case studies in *Catalyst in Action*. This focus on developing the whole student aligns with holistic ePortfolio assessment, current discussions of high-impact practices, efforts on many campuses to connect the work of student affairs offices with academic programs, and newer general education designs, including at my own institution. I highlight identity development here in part to draw attention to Carol Geary Schneider's (2018) rousing prologue to *Catalyst in Action*, wherein she emphatically affirms the importance of this aspect of high-impact ePortfolio practice to the larger purposes of higher education:

> Leaders in the ePortfolio movement pay considerable attention to students' development and demonstration of . . . essential proficiencies. But, in a striking reclaiming of one of the oldest purposes of a liberal and liberating education, ePortfolio pedagogy is equally interested in the selves students are creating *behind* those public performances. (p. x)

Like Eynon and Gambino's previous book, *High-Impact ePortfolio Practice* (2017), *Catalyst in Action* is a rich resource, providing useful and usable guidance to

ePortfolio practitioners at all types of higher education institutions and at all levels of those institutions. The models presented show us what thoughtful, high-impact ePortfolio practice looks like and—perhaps more importantly—provide evidence that tells us why we should aspire to achieve it.

References

Cambridge, D. (2010). *ePortfolios for lifelong learning and assessment.* San Francisco, CA: Jossey-Bass.

Donaldson, L., & Glynn, M. (2018). From a standing start to a sprint finish: The Dublin City University learning portfolio journey. In B. Eynon & L. M. Gambino (Eds.), *Catalyst in action: Case studies of high-impact ePortfolio practice* (pp. 98-112). Sterling, VA: Stylus.

Eynon, B., & Gambino, L. M. (Eds.). (2018). *Catalyst in action: Case studies of high-impact ePortfolio practice*. Sterling, VA: Stylus.

Eynon, B., & Gambino, L. M. (2017). *High-impact ePortfolio practice: A catalyst for student, faculty, and institutional learning.* Sterling, VA: Stylus.

Getman-Eraso, J., & Culkin, K. (2018). High-impact catalyst for success. In B. Eynon & L. M. Gambino (Eds.), *Catalyst in action: Case studies of high-impact ePortfolio practice* (pp. 32-49). Sterling, VA: Stylus.

Goodwin, J. T., & Lithgow, K. (2018). ePortfolio, professional identity, and twenty-first century employability skills. In B. Eynon & L. M. Gambino (Eds.), *Catalyst in action: Case studies of high-impact ePortfolio practice* (pp. 154-171). Sterling, VA: Stylus.

Hubert, D., & Dibble, E. (2018). ePortfolio as a capstone-in-progress: Reflective pedagogy, faculty-centric processes, and evidence of impact. In B. Eynon & L. M. Gambino (Eds.), *Catalyst in action: Case studies of high-impact ePortfolio practice* (pp. 198-208). Sterling, VA: Stylus.

Kuh, G. D. (2017). And now there are 11. In B. Eynon & L. M. Gambino, High-impact ePortfolio practice: A catalyst for student, faculty, and institutional learning (pp. vii-xi). Sterling, VA: Stylus.

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter.* Washington, DC: Association of American Colleges and Universities.

Kuh, G. D., Gambino, L. M., Bresciani Ludvik, M., & O'Donnell, K. (2018). *Using ePortfolio to document and deepen the impact of HIPs on learning dispositions* (NILOA Occasional Paper No. 32). Urbana, IL: National Institute for Learning Outcomes Assessment. Retrieved from http://www.learningoutcomeassessment.org/documents/Occ%20paper%2032Final.pdf

Moore, J. L., Pope-Ruark, R., & Strickland, M. (2018). Not just another assignment: Integrative ePortfolios, curricular integrity, and student professional identity. In B. Eynon & L. M. Gambino (Eds.), *Catalyst in action: Case studies of high-impact ePortfolio practice* (pp. 172-184). Sterling, VA: Stylus.

Schneider, C. G. (2018). How ePortfolios are changing the meanings of student success. In B. Eynon & L. M. Gambino (Eds.), *Catalyst in action: Case studies of high-impact ePortfolio practice* (pp. ix-xv). Sterling, VA: Stylus.

Van Scoy, I. J., Fallucca, A., Harrison, T., & Camp, L. D. (2018). Integrative learning and graduation with leadership distinction. In B. Eynon & L. M. Gambino (Eds.), *Catalyst in action: Case studies of high-impact ePortfolio practice* (pp. 15-31). Sterling, VA: Stylus.

Yancey, K. B. (2004). Postmodernism, palimpsest, and portfolios: Theoretical issues in the representation of student work. *College Composition and Communication, 55*(4), 738-762. doi:10.2307/4140669

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SUSAN KAHN joined Indiana University-Purdue University Indianapolis (IUPUI) in 1998 as director of the Urban Universities Portfolio Project, a six-campus collaboration that produced the first electronic institutional portfolios. From 2007-2018, she served as director of IUPUI's campus-wide student ePortfolio Initiative. Before joining IUPUI, she directed a University of Wisconsin System-wide faculty development program focused on effective teaching and learning and on expanding campuses' capacity to support teaching and learning. Dr. Kahn co-edited *Electronic Portfolios: Emerging Practices in Student, Faculty, and Institutional Learning* and the forthcoming *Trends in Assessment: Ideas, Opportunities, and Issues for Higher Education.* She chaired the Board of Directors of the Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL), the international association for ePortfolio researchers and practitioners, from 2011-2015. Currently, she serves as IUPUI's Director of Planning and Institutional Improvement Initiatives and as an adjunct faculty member in the campus's University College and Department of English. In all of her roles, she has worked to promote student learning and development and to help faculty, departments, and institutions support and document student learning of key collegiate abilities and skills.

What, Exactly, Are We Amplifying? A Decade of AAC&U's ePortfolio Forum

J. Elizabeth Clark

LaGuardia Community College, CUNY

What does ten years of ePortfolio research and practice look like? The AAC&U ePortfolio Forum celebrated a decade in 2019. This article offers a brief overview of the past ten years of forums in the context of the 2019 forum. Five key themes were highlighted in 2019: 1) the history of ePortfolios in higher education, 2) the ethics of ePortfolios on campus, 3) student voices and self-authorship, 4) highlights from the current research agenda, and 5) the questions that persist, often as a moving target, in using ePortfolios on campus. Together, they revealed a field that is grounded and mature providing an opportunity to see evolution over time.

The AAC&U ePortfolio Forum, hosted in conjunction with the *International Journal of ePortfolio* and the Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL) has become one of two annual loci for information about ePortfolios in higher education. It, and the annual AAEEBL summer conference, provide a central space for novice and experienced ePortfolio practitioners to come together with those who are curious about ePortfolios. This year's day-long forum featured 29 sessions and three plenaries.

A decade in, the sessions offered a notable change. Previous forums often focused on definitional issues; "how tos" from the creation of individual student ePortfolios to the nuts and bolts of ePortfolio program construction; individual and programmatic ePortfolio exemplars; classroom case studies; classroom, programmatic, and institutional assessment data; and anecdotal examples all designed to provide compelling evidence for the value of ePortfolios. This year's forum was a study in a field that is grounded and mature. The forum provided a place to see evolution over time as campuses presented long-term initiatives firmly embedded in the landscape of their colleges and universities. The forum also created space for pushing back in some key areas such as privacy. Rather than creating a narrative of why, the forum highlighted five key themes:

1. The history of ePortfolios in higher education.
2. The ethics of ePortfolios on campus.
3. Student voices and self-authorship.
4. Highlights from the current research agenda.
5. The questions that persist, often as a moving target, in using ePortfolios on campus.

Charting an ePortfolio Landscape

A quick look back at previous forums shows how the annual focus has contributed to establishing ePortfolios as a field in higher education. Focusing on assessment, high-impact practices, learning, student voices, research, equity, ownership, and positioning within the university, the forum has built, and recursively reexamined key themes, deepening the learning of the community and highlighting the signature moments in shared learning.

- 2010 (pre-conference symposium): "The Search for VALUE: Innovation, Economic Uncertainty, and E-Portfolio Assessment"
- 2011: "Deepening High Impact Learning"
- 2012: "Look What I Can Do: Reclaiming a Focus on Learning"
- 2013: "E-Portfolios: Foundational Knowledge, Student Voices, and Best Practices"
- 2014: "Defining Practice and a Research Agenda"
- 2015: Global Digital Positioning Systems: E-Portfolios in a Digital Age"
- 2016: "Achieving Equity through Student Success and E-Portfolios"
- 2017: "ePortfolio as the Eleventh Meta High-Impact Practice for Student Signature Work"
- 2018: "ePortfolios and the American Dream: Empowering Students to Take Ownership of Their Futures"
- 2019: "ePortfolios and the Value of Higher Education: Celebrating 10 Years of AAC&U's ePortfolio Forum"

Working collaboratively with both AAEEBL and the *International Journal of ePortfolio*, the forum has been able to provide a space for continued examination of ePortfolio practice while also highlighting best practices and exemplars.

How Did We Get Here?

ePortfolios as a field have a larger history than the AAC&U Forum, something keynote speaker John C. Ittelson was well poised to chronicle. Ittelson (2019) began his talk, "Documenting Learning: A Perspective . . ." with literal pomp and circumstance, ascending to

the stage in full academic regalia as Elgar's Pomp and Circumstance March No. 1 played. He focused on the origins of ePortfolio, tracing one history back to 1999 at California State University when the CSU teacher prep program moved from paper binders with sticky-noted feedback to CDs. He highlighted the early work of Helen Barrett and Helen Chen, marking Chen's *folio thinking* as a vital anchor in our work today. He focused on 2001-2002 as a key moment when ePortfolios began to take hold. He presented a session for the National Learning Infrastructure Initiative on teaching and learning assessments with ePortfolios. He also wrote an article in *Educause* on "Building an E-dentity for Each Student" (Ittelson, 2001). The same year, Trent Batson (2002) wrote "The Electronic Portfolio Boom," looking at the emerging trend of ePortfolios on campuses and raising key questions for consideration as a field.

Ittelson's (2019) abbreviated history highlighted key moments in the progress of ePortfolios in higher education including (a) the establishment of the ePortfolio Action Committee (ePAC); (b) AAEEBL; (c) Darren Cambridge, Barbara Cambridge, and Kathleen Blake Yancey's (n.d.) Inter/National Coalition; (d) *Electronic Portfolios 2.0* (Cambridge, Cambridge, & Yancey, 2009); (e) *The Handbook of Research on ePortfolio* (Jafari & Kaufman, 2006); (f) AAC&U and AAEEBL's *Field Guide to ePortfolios* (Batson et al., 2017); (g) the inclusion of ePortfolios as a high-impact practice (Watson et al., 2016); and (h) Bret Eynon and Laura Gambino's two-book series, *High Impact ePortfolio Practice: A Catalyst for Student, Faculty, and Institutional Learning* (2017) and *Catalyst in Action: Case Studies of High-Impact ePortfolio Practice* (2018). These contributions, and others not highlighted in Ittelson's (2019) talk, have all contributed to a shared language and shared values about ePortfolios and an understanding of ePortfolios for integrative learning, as curriculum, for assessment, for digital identity, for documenting learning, for inquiry, and for professional development.

Despite these successes, however, Ittelson (2019) pointed to the fact that some early stake holders in ePortfolios such as OSPI/Sakai, ePortfolio California, and the Carnegie Toolkit have faded away. Ittelson (2019) posited that we learned from those initiatives and then built on them in other ways.

Ittelson (2019) articulated the vital role he sees for ePortfolios in the current landscape of American higher education. He cited a recent Gallup poll indicating that confidence in higher education is down since 2015. Jones (2018) explained the nine percentage point decline: "No other institution has shown a larger drop in confidence over the past three years than higher education. The next-largest decline was a four-point decrease in confidence in the church or organized religion" (para. 5).   Ittelson (2019) said that higher

education is interested in completion rates, student engagement, and employer feedback. ePortfolios are uniquely situated to provide this. But, he argued, we need to continue to get the word out.

Returning to his initial graduation metaphor, Ittelson (2019) ended by reminding us that the ePortfolio Forum functions like a graduation ceremony where learning is celebrated. But graduations are not just culminations. They also point people in the right direction as they continue on their learning journey.

The Seduction of Technology, The Ethics of the University

In contrast, Sol Bermann's (2019) cautionary keynote "Beyond Technologies and Outcomes: Building Ethics and Compliance into Teaching, Learning, and Assessment" focused on the juxtaposition of technology and privacy based on his work as Chief Privacy Officer and Interim Chief Information Security Officer at the University of Michigan. He challenged the audience to consider whether legality and ethics are the same. So often, campuses faced with limited budgets, urgent assessment needs, and the promise of a decade of research into the efficacy of ePortfolios look for an easy and cheap solution: free ePortfolio platforms. Still other campuses enter ePortfolios on the utopian side of technology, believing that technology is a panacea.

Bermann's (2019) cautionary tale focused on the ethics of ePortfolio practice. He urged participants to carefully consider all the implications of technology and privacy as part of their overall ePortfolio implementation. He traced a brief history of technology and privacy focusing on how the current moment entails pervasive data collection, pervasive digital surveillance, and ethical questions over data such as who owns the data, who has access to the data, and what can be done with the data. Beyond questions sometimes posed at the beginning of ePortfolio projects, such as who owns the ePortfolio, Bermann's (2019) deeper questions about data ownership, future data mining, and what it is that we ask of students when they engage with ePortfolios reveal a deep unease with the current state of technology. He reiterated a common theme in higher education: free is never free, asking the question, "how can the user challenge any of the above questions?"

Early on in his talk, Bermann (2019) said that ePortfolios should not be something that is just "done" to students, focusing on agency and choice. In the same way, his perspective on data and privacy suggested that bad platform agreements should not just happen to campuses. One of his key recommendations is for faculty and administrators to review the terms of service agreements that they require students to accept before joining ePortfolio systems. He argued that what

is legal regarding student data is not always ethical. Faculty should know and reflect on what they are asking their student to accept as part of a course. His talk concluded by urging ePortfolio practitioners and campuses to think of themselves as agents of change, scripting new agreements for ePortfolio data, management, privacy, and ownership. He suggested that this is a critical area for research and leadership in higher education.

At the Heart of Our Practice: Student Ownership

While ePortfolio forums have always highlighted student work and student learning using ePortfolios, this year's Forum featured student voices in videos, written reflections, and a keynote luncheon panel. These presentations focused largely on the idea of story-telling and how students are empowered to tell their own stories about their educations. Hearing authentic student voices discuss what is meaningful and what is effective in their ePortfolio experience is increasingly important as we move from arguing for the need for ePortfolios to continuing to study and improve their use. Margaret J. Marshall led a panel titled "Students' Perspectives on ePortfolios and Learning A Student Panel Discussion" (Marshall, Barco-Medina, Devore, Thomas, & Warr, 2019) featuring four Auburn University students: (a) Genesis Barco-Medina (a graduate student in English), (b) Elizabeth A. Devore (a graduate student in Electrical Engineering), (c) Bri Thomas (a senior in Political Science), and (d) Brent Warr (a senior in Environmental Design). The panel provided a concentrated look at meaningful ePortfolios built around faculty and student learning with purposeful integration into programs and degrees. The students focused on autonomy, the importance of crafting their own narratives, and thinking strategically about how to use ePortfolios in job and future career plans. Each student placed a heavy emphasis on the importance of ownership of the ePortfolio, both in content and design. It was clear that their ePortfolios were centrally theirs, making a targeted rhetorical argument about who they are, what they have accomplished, and where they are headed for a carefully considered audience. The students also commented on the importance of having a space to translate all of their college experiences into a central location. As such, this panel centered on the rhetorical uses of ePortfolio as both a learning and communication tool.

The student presenters also talked about moments of initial resistance to ePortfolio. They reflected on being unsure of how an ePortfolio might help them in their careers. While each of the students was a powerful advocate for the use of ePortfolios in the curriculum they also provided reinforcement for the importance of talking with students about the "why" of ePortfolios and the importance of strategic placement of ePortfolios in the curriculum to provide multiple opportunities to revisit and continue to build the ePortfolio.

Highlights From the Current Research Agenda

Two strands of the day highlighted authors featured in recent publications. Five sessions focused on work included in Bret Eynon and Laura M. Gambino's (2018) *Catalyst in Action: Case Studies of High-Impact ePortfolio Practice.* These sessions situated ePortfolio practice in the Catalyst model, developed by 24 campuses using ePortfolio, which identified inquiry, integration, and reflection as central practices in ePortfolio pedagogy. The Catalyst examines how pedagogy, professional development, technology, outcomes assessment, and scaling up are key considerations in ePortfolio program development for faculty, students, programs and majors, and institutions. Three sessions focused on work included in Kathleen Blake Yancey's (2019) *ePortfolio as Curriculum: Diverse Models and Practices,* examining the importance of ePortfolio as an intentional part of curriculum development.

An additional double session led by C. Edward Watson (2019), Executive Editor of the *International Journal of ePortfolio*, focused on developing and implementing an ePortfolio Scholarly research agenda. In this session, he reviewed the relevant practices in ePortfolio research, the stages of the research process, effective study design, appropriate methodology, and how to pose and examine measurable and achievable research questions.

The ePortfolio Decade

While a decade is commonly thought of as a compilation of years, it is also a unit of measurement for electrical frequency ratios, particularly when looking at amplifiers. What, then, have we been amplifying over the past ten years of AAC&U ePortfolio Forums? This decade built on the early work outlined by Ittelson (2019), moving ePortfolios from an isolated classroom practice in some disciplines into a wide-spread practice in higher education.

It is useful to consider some of the recurring questions and principles of ePortfolios. A trio of early quotes from ePortfolio thought leaders help to frame what is new, what is consistent, and what remains difficult about ePortfolio practice.

In 2001, John Ittelson explored the early possibilities for the integrative potential of ePortfolios as a centering locus for connecting personal, academic, and professional work:

Joellen is a 36-year old mother of two. She currently holds a full-time job. After graduating from high school, Joellen completed one year at her local community college. She and her husband then moved to a different state, and she took some additional courses from a local community college. She also took a college telecourse. She recently decided to matriculate at a four-year institution in her city. The college has asked for all her prior transcripts, in order to determine how many and which credits will transfer.

    Joellen's educational history represents a composite of the type that students often bring to college. In this age of multiple campus enrollments, virtual campuses, and online courses, pity today's harried students as they struggle to keep track of their multiple transcripts. Isn't it time to explore a more student-centered solution? (p. 43)

While "online" now replaces "telecourse" in our considerations of digital higher education, many of the initial issues raised by Ittelson remain. How do ePortfolios continue to offer a way to connect different educational experiences and to provide a stable base for building an educational resume in the form of an ePortfolio?

In 2002, Trent Batson raised early concerns about the security of ePortfolios, thinking about how to keep online data safe:

Security: Can we maintain a high level of security for personal information transmitted over the wires or stored in a server on campus? In other words, how do we make an ePortfolio platform an enterprise application? An enterprise application keeps personal data secure from end-to-end, requiring coordination and support from central servers and data folks. A laissez-faire approach to electronic portfolios on a campus may expose the data to hacking, and the university to a law suit. ("Let's Do It," para. 4)

And in 2009, Kathleen Blake Yancey raised issues of student engagement. She pointed to the importance of keeping students connected to and engaged with the ePortfolio:

At the heart of this work in electronic portfolios is what was first a hope and then an assumption, and now a research-based claim: that *creating*, *evidencing*, *connecting*, and *reflecting* involved in electronic portfolios engage students in new and beneficial ways—especially when the portfolio provides a space for student-informed participation

    The literature on e-portfolios suggests that student engagement is a critical element of portfolio development (Barrett 2000; Batson 2002; Yancey 2001). The inability to get students engaged or excited about their e-portfolios will result in a flawed implementation. (p. 28)

Together, these three quotes show something John Ittelson (2019) called a moving target: while much of the field has changed over the past decade, many of the key questions remain the same. The Forum provided a space to consider the recursive questions that the field grapples with. There are tensions between ownership and privacy. Who owns the ePortfolio? How do we negotiate the space between a student-centered ePortfolio and institutional needs for assessment and documentation of student learning? Privacy and security concerns have moved even closer to the center of ePortfolio discussions as the field considers how to engage students in critical training to become digitally literate citizens. And the ePortfolio is most effective when student voices and reflection are at the center of ePortfolio practice.

John Warner's (2018) recent book *Why They Can't Write* told the anecdote of bringing a child to the doctor for a diagnosis. Warner (2018) walked the reader through the steps in what a physician does to diagnose. He says there are four key steps (2018): "(1) Knowledge (What do doctors know?), (2) Skills (What can doctors do?), (3) Habits of mind (How do doctors think?), (4) Attitudes (What do doctors believe and value about being a doctor?)" (p. 20). These steps are reminiscent of Lee S. Shulman's (2005) "Signature Pedagogies in the Professions" that formed the basis for how we now talk about signature work and signature pedagogy as a practice and habit of mind.

This ePortfolio decade firmly established ePortfolios in higher education as powerful tools for teaching and learning, for assessment, for curriculum, for professional development, and for student identity. We have amplified student voices, student learning, reflection, assessment, and explored key issues such as ownership and privacy. More than that, however, we have amplified that ePortfolios are a pedagogy and we, as a community, are practitioners. What do ePortfolio practitioners know? What do ePortfolio practitioners do? How do ePortfolio practitioners think? What do ePortfolio practitioners believe and value about being an ePortfolio practitioner?

Over the past decade, we have amplified the knowledge, skills, habits of mind, and attitudes of ePortfolio practitioners, setting the stage for continuing to explore and deepen our learning; for returning and recursively revising our practice; for creating new questions and finding different answers for questions that remain. We have also created a generous space for people who want to join this work, recognizing that there is always a place for the campus or faculty member who wants to explore "how to" and to begin this work.

References

Batson, T. (2002). The electronic portfolio boom: What's it all about? *Syllabus*, *16*(5). Retrieved from https://campustechnology.com/Articles/2002/11/The-Electronic-Portfolio-Boom-Whats-it-All-About.aspx

Batson, T., Coleman, K. S., Chen, H. L., Watson, C. E., Rhodes, T. L., & Harver, A. (Eds.). (2017). *Fieldguide to eportfolio*. Washington, DC: Association of American Colleges and Universities.

Bermann, S. (2019, January). *Beyond technologies and outcomes: Building ethics and compliance into teaching, learning, and assessment*. Opening plenary presented at the 10th Annual Forum on Digital Learning and ePortfolios, Association of American Colleges and Universities Annual Meeting, Atlanta, GA.

Cambridge, D., Cambridge, B., & Yancey, K.B. (2009). *Electronic portfolios 2.0: Emergent research on implementation and impact*. Washington, DC: Stylus.

Cambridge, D., Cambridge, B., & Yancey, K. B. (n.d.). *Inter/National Coalition for Electronic Portfolio Research*. Retrieved from http://incepr.org/

Eynon, B., & Gambino, L. M. (2017). *High-impact ePortfolio practice: A catalyst for student, faculty, and institutional learning.* Washington, DC: Stylus.

Eynon, B., & Gambino, L. M. (Eds.). (2018). *Catalyst in action: Case studies of high-impact ePortfolio practice.* Washington, DC: Stylus.

Ittelson, J. C. (2001). Building an e-dentity for each student. *Educause Quarterly, 4*, 43-45.

Ittelson, J. C. (2019, January). *Documenting learning: A perspective*. Closing plenary presented at the 10th Annual Forum on Digital Learning and ePortfolios, Association of American Colleges and Universities Annual Meeting, Atlanta, GA.

Jafari, A., & Kaufman, C. (2006). *Handbook of research on ePortfolios*. Hershey, PA: Idea Group Reference.

Jones, J. M. (2018, October 9). *Confidence in higher education down since 2015* [Blog post]. Retrieved from https://news.gallup.com/opinion/gallup/242441/confidence-higher-education-down-2015.aspx

Marshall, M. J. (Chair), Barco-Medina, G., Devore, E. A., Thomas, B., & Warr, B. (Presenters). (2019, January). *Students' perspectives on ePorfolios and learning: A student panel discussion*. Panel discussion presented at the 10th Annual Forum on Digital Learning and ePortfolios, Association of American Colleges and Universities Annual Meeting, Atlanta, GA.

Shulman, L. S. (2005). Signature pedagogies in the professions. *Daedalus*, *134*(3), 52-29. doi:10.1162/0011526054622015

Warner, J. (2018). *Why they can't write: Killing the 5-paragraph essay and other neces*sities. Baltimore, MD: Johns Hopkins University Press.

Watson. C. E. (2019, January). *Developing and implementing an ePortfolio scholarly research agenda: An ePortfolio forum workshop*. Workshop presented at the 10th Annual Forum on Digital Learning and ePortfolios, Association of American Colleges and Universities Annual Meeting, Atlanta, GA.

Watson, C. E., Kuh, G. D., Rhodes, T., Penny Light, T., & Chen, H. L. (2016). ePortfolios: The eleventh high impact practice. *International Journal of ePortfolio, 6*(2), 65-69. Retrieved from http://www.theijep.com/pdf/IJEP254.pdf

Yancey, K. B. (2009). Electronic portfolios a decade into the twenty-first century: What we know, what we need to know. *Peer Review*, *11*(1). Retrieved from https://www.aacu.org/sites/default/files/files/peerreview/Peer_Review_Winter_2009.pdf

Yancey, K. B. (2019). *ePortfolio as curriculum: Diverse models and practices.* Washington, DC: Stylus.

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J. ELIZABETH CLARK is Professor of English at LaGuardia Community College, City University of New York where she teaches composition, literature, children's literature, and creative writing. Part of the original research team at LaGuardia, she is particularly interested in the use of ePortfolios in teaching writing and in college-wide integrative learning.