Using Student Feedback to Inform Change Within a Community College Teacher Education Program's ePortfolio Initiative

Denise Farrelly, Ed.D.
Assistant Professor, Education Program, Kingsborough Community College

Daniel Kaplin, Ph.D.
Assistant Professor, St. Francis College

The purpose of this mixed methods research study was to evaluate the impact of an ePortfolio initiative within a community college teacher preparation program in relation to its intended student learning outcomes and offer recommendation for further improvement. In this study, we sought to discover the extent to which the ePortfolio program served as a tool for the development of students' technological skills, professional development, and overall growth, based on data collected from student surveys and interviews. The results of the study support the need for improvements to the ePortfolio program in order to enhance students' sense of ownership and intrinsic motivation, as well as to promote self-reflection and cocurricular learning. Higher education leaders and faculty members can use the findings and recommendations from this study to develop ePortfolio practices in which autonomy and intrinsic motivation are valued, and social pedagogy is incorporated in order to best meet the needs of the students.

Electronic portfolios, or ePortfolios, gave rise in the early 1990s with the onset of informational technology, enabling users to move beyond binder and paper portfolios and demonstrate their capabilities in digital form (Dominguez, 2014). The development of ePortfolios as a tool for enhancing curriculum, instruction, and assessment is supported by experiential learning theory. Experiential learning can be described as a pedagogical approach involving students' active engagement in their own learning processes (Fenwick, 2000). It is through firsthand experience that the learner is able to link action and thought (Beard & Wilson, 2006). Rogers'

(1969) theory of experiential learning specifies that learning experiences should be self-initiated and personally meaningful to the learner, as opposed to content that is prescribed by a teacher and disconnected from a student's reality. The opportunity to engage in diverse learning experiences involving ePortfolio technology and other 21st-century elements is transferable to students' real-world and work experience after graduation (Harden, Allen, Chau, Parks, & Zanko, 2012). In the ever-evolving digital world, institutions of higher education should be compelled to offer students opportunities for connected learning, in which they are able to apply learning experiences in an integrated fashion (Eynon et al., 2014a). ePortfolios can provide students with an opportunity to make connections and showcase their learning experiences in unique and innovative ways that move beyond traditional learning and assessment models.

In 2016, the Association of American Colleges and Universities added ePortfolio pedagogy to its set of high-impact practices (Pasquerella, 2017; Watson, Kuh, Rhodes, Light, & Chen, 2016). This addition was based on longitudinal data collected from the Connect 2 Learning (C2L) project (Eynon & Gambino, 2014) demonstrating the positive impact of ePortfolio on factors such as average grades (Deneen, Brown, & Carless, 2018; Knight, Hakel, Gromko, & Association for Institutional Research, 2008), retention (Conefrey, 2017; Knight et al., 2008; Sanchez, Zelezny, & Junn, 2013), and graduation rates (Conefrey, 2017; Knight et al., 2008; Watson et al., 2016). An ePortfolio serves as an electronic record of a student's work (Cowan & Peacock, 2017; Friedman, 2012; Wray, 2007). More than merely a collection of artifacts, the development of an ePortfolio encourages a thoughtful selection and presentation process, as well as deep reflections on those processes (Buzzetto-More & Alade, 2008; Jenson & Treuer, 2014; Orland-Barak, 2005). Dominguez (2014) described the various terms, types, and purposes of an ePortfolio, also commonly referred to as a web-folio, e-folio, or digital portfolio. Based on their specific objectives, students can create an ePortfolio for various purposes—working, learning, presentation, personal development, multiple owner, or assessment (Egetenmeyer & Malita, 2014; Matthews-DeNatale, 2014). The ePortfolio can be used to elicit student reflection, develop students' sense of self, demonstrate information and communication technology skills, and serve as an assessment tool (Blakely, 2016; Deneen & Shroff, 2014; Rowley & Munday, 2014; Tosh, Light, Fleming, & Haywood, 2005). While ePortfolios can be categorized in many different ways based on their purpose, they are commonly used to display an array of work samples demonstrative of a person's achievements or capabilities (Buzzetto-More, 2010; Buzzetto-More & Alade, 2008; Dominguez, 2014; Flanigan, 2012).

ePortfolios can provide learners with a convenient means for organizing and reflecting upon artifacts in order to present evidence of their values, beliefs, growth, and learning while showcasing their technological skills (Singer-Freeman & Bastone, 2017).

The ePortfolio is a particularly useful tool for demonstrating preservice teacher growth, reflection, and competency in teacher education programs (Chitpin & Simon, 2009; Egetenmeyer & Malita, 2014; Masters, 2013; Young, 2008). Their adoption in teacher education programs across the United States has grown rapidly over the past decade, with these programs consistently utilizing ePortfolios as a means of facilitating critical reflection and self-assessment (Apostel, 2015; Parker, Ndoye, & Ritzhaupt, 2012; Rivera & Loebick, 2017). As teacher education program outcomes are typically connected to pedagogical skills needed beyond graduation in the classroom, ePortfolios should support students in attaining and showcasing these professional skills through the inclusion of teaching-related artifacts with corresponding links to teaching standards (Apostel, 2015; Barrett & Knezek, 2003; Deneen & Shroff, 2014). Engaging students in the process of hyperlinking their artifacts to professional teaching standards, accompanied by reflective statements, enables them to make connections between their course-related learning and the teaching practices they will implement in the classroom. This practice can help strengthen the impact of ePortfolios and reconcile the needs of both the program and the students (Parker et al., 2012). Teacher education programs can utilize ePortfolios as a means of assessing students' teaching competencies as they align to the professional teaching standards.

Reflective writing that demonstrates the reasoning behind the inclusion of the ePortfolio artifacts is a crucial counterpart to the artifacts themselves, without which the ePortfolio can appear as a disconnected collection of assignments with little academic value (Plaisir, Hachey, & Theilheimer, 2011; Yancey, 2009). Eynon, Gambino, & Torok (2014b) describe reflective practice as a transformative element with the power to shift ePortfolio use from a simple technology to an intentional process of making connections, integrating learning across disciplines, incorporating life and professional experiences, and discovering personal growth. Reflective practices enable preservice teachers to set goals for themselves and monitor their own academic progress, skills related to self-directed learning (Chitpin & Simon, 2009; Miller & Morgaine, 2009). Additionally, ePortfolio reflections can catalyze student learning in the development of professional identity, self-assessment skills, critical thinking skills, making connections across concepts learned within a course, across mul-

tiple courses, and between coursework and lived experiences (Eynon et al., 2014b; Miller & Morgaine, 2009; van Wyk, 2017). Although reflection has been traditionally considered a solitary activity, Bass and Elmendorf (2012) describe social pedagogy as a reflective social learning process in which students represent their learning through authentic activities and frequent opportunities for communication. This social pedagogy has the power to transform the ePortfolio into a collaborative tool, increasing students' exposure to diverse perspectives and viewpoints while showcasing their real-world, experience-based learning in ways that traditional assessment measures cannot (Bass & Elmendorf, 2012; Bhika, Francis, & Miller, 2013; Chen, Light, & Ittelson, 2012; Lewis, 2017). However, ePortfolio development has primarily been utilized in educational settings as a means of assessing students' competencies and abilities, which has come to conflict with students' intrinsic purposes for creating an ePortfolio (Barrett, 2006; Parker et al., 2012). It is imperative that the ePortfolio development process remains student-centered and meaningful to the student, as this can affect the overall ePortfolio experience and outcome for students (Stansberry & Kymes, 2007; Tosh et al., 2005; Wolf & Dietz, 1998). Students should be familiar with the diverse purposes for developing an ePortfolio, and consider their own personal purpose, lest the process become a meaningless task for students and faculty (Wray, 2008). Additionally, students should be awarded a sense of autonomy over their development and assessment process, as well as have a strong grasp of their own personal reasons for creating an ePortfolio. The creation of an ePortfolio for authentic purposes that transcend course requirements and grades, with the opportunity to engage in meaningful reflective inquiry, is likely to yield a greater awareness of students' own professional growth and learning.

ePortfolios can be a highly effective learning tool for preservice teachers today, as they provide the opportunity to demonstrate professional growth in a way that aligns with their digital literacy skills as 21st century learners. The National Council for Accreditation of Teacher Education (2014) considers ePortfolios to be an important link between information technology and instruction, which is a requirement for teacher preparation programs. The very process of creating an ePortfolio enables learners to improve their own technology skills (Young, 2008). Preservice teachers' engagement with ePortfolios has been shown to demonstrate evidence of transformational learning as it relates to teachers' use of web development tools incorporated into their classroom instructional practices (Sherry & Bartlett, 2005; Stansberry & Kymes, 2007). Utilizing ePortfolios fosters an authentic use of technology that can enhance the teaching practices

of preservice teachers, rather than an underutilized imposition, as many technology initiatives have been known to become (Crichton & Kopp, 2008). Preservice teachers who utilize ePortfolios during their studies are more likely to make connections between technology skills and concepts learned during their teacher training and their in-service instructional practices (Dawson, 2006; Munday, 2014; Young, 2008). Thus, the incorporation of an ePortfolio component into a teacher training program can impact the technology skills of not only the preservice teachers, but of their future students as well.

Key factors in promoting student motivation during the ePortfolio development process include a proper introduction highlighting its purposes and rationale for how it will be useful for students in their future roles as educators, led by an individual who is knowledgeable about ePortfolio theory and practice and has utilized them firsthand (Tosh et al., 2005; Weber & Myrick, 2018; Wray, 2008). Proper initial training and subsequent technological support is crucial if students are to make the most of their ePortfolio experience (Parker et al., 2012; Ritzhaupt, Ndyoe, & Parker, 2010). Otherwise, students may become confused and disoriented when they encounter technological issues (Stansberry & Kymes, 2007). This study sought to discover the effectiveness of an ePortfolio initiative within a community college teacher preparation program, based on direct feedback from the student participants.

Organizational Context

The study was conducted in 2017 in an urban community college in the Northeast region of the United States with a predominantly low-income, ethnic minority population. The college enrolled approximately 15,000 full and part-time students in 2017. Approximately 60% of students enrolled in 2017 were 22 years of age or younger. According to its posted mission statement, one of the main goals of the community college was to develop student competence in information literacy, oral communication, quantitative skills, and technological literacy. As Web 2.0 skills such as multimedia self-authoring and publishing personalized content via social media sites are embedded in the lifestyles of the current student population, ePortfolio development acts as an extension of those skills, enabling students to meet an important college-wide goal by building on skills they already possess (Clark & Eynon, 2009).

The study focused on the impact of an ePortfolio initiative within the community college's teacher education program, which enrolled a total of 511 students in the fall of 2017. The intent of the ePortfolio initiative

was to enhance technology skills and develop education-related career awareness for preservice teachers. Prior to the ePortfolio initiative, which began its pilot implementation in the fall of 2011, the education program utilized cumbersome binder portfolios as a student outcomes assessment tool. Students' prior experience with computer technology, including use of the internet, text messaging, and social networking served as the rationale for the transition from binder to electronic portfolio. The majority of students were already accustomed to utilizing these modalities for academic and personal use. Another intent of the ePortfolio initiative was to train students in the use of sophisticated technologies in order to increase their competitiveness with other students, both within and beyond college. Increasing retention rates and connecting students with professional internship experiences were goals connected to the larger college community. On an affective level, the program aimed to assist students in building their self-esteem and interpersonal skills, traits that are considered important in becoming effective teachers.

Faculty members within the education program generally agreed that the purposes of the ePortfolio initiative were more directly related to the development of pedagogical skills. The ePortfolios were intended to encourage reflection and visible thinking in relation to students' course assignments and field experiences in local early childhood and elementary classrooms. It was agreed upon that ePortfolios, if created effectively, had the potential to assist students in obtaining teaching positions after graduation. Additionally, ePortfolios served as a valuable tool in assessing and supporting students' progress toward meeting the National Association for the Education of Young Children's Standards for Early Childhood Professional Preparation (NAEYC, 2009).

The program followed Friedman's (2012) guidelines for ePortfolio creation and organization, which provided a choice of several templates that students can utilize to structure their ePortfolio in order to provide a logical story of the learner's development as an educator. The template, chosen by the education program leaders, contained a biographical section where students uploaded their introduction, statement of educational philosophy, and resume. The template also contained a section entitled My Work where students' course assignments were organized by subject area. Once uploaded in the appropriate category, the assignments were then hyperlinked to the NAEYC standards, where students included a rationale describing how the assignment assisted them in meeting or gaining insight into the specific standards.

Based upon the knowledge that participants should be thoroughly prepared prior to ePortfolio implementation (Tindall-Ford, Waters, & Johnson, 2010), as the planning stage is a critical step in the ePortfolio development process, all faculty members and students were provided formal ePortfolio training sessions at the onset of the program. All students enrolled in the introductory course in the education program were required to attend a one-hour training session in order to create their initial ePortfolio, and continue to develop it independently throughout their course sequence. The students did not receive any further required training during subsequent courses in the program. Individual written feedback in the form of electronic comments from instructors assisted students in formatively revising their work at the end of each course, although these comments were optional for the instructors. Students' final ePortfolios were submitted for evaluation during the capstone courses of the program sequence. Faculty members participated in a voluntary training session prior to programmatic implementation.

Program Concerns

In the spring of 2013, a review of the ePortfolio program was conducted in order to facilitate the education program's self-study. After reviewing the ePortfolio processes in place, there was an observed need for improvement in the quality of the students' completed ePortfolios. As stated in the final review report, the education program's ePortfolios provided students with a variety of modalities (written reflection, multimedia capabilities) in order to assess their own learning. In addition, the review found that the structure and template of the ePortfolios worked well in guiding students to include artifacts that they were likely to need upon transfer to a four-year college while providing them with the flexibility to make the portfolio their own. However, despite these observed strengths, the review stated that the one technology laboratory visit provided to students was not enough to support them in creating their ePortfolios. This review implied that a more in-depth evaluation of the ePortfolio program was necessary in order to determine more concrete, universal improvements that could enhance students' interactions with this powerful learning tool.

In the years since the ePortfolio program's initial development, issues arose that impeded its overall success. Faculty members informally noted that the students' ePortfolios lacked a sense of professional presentation, and many students expressed to faculty members their dissatisfaction with their ePortfolios, as well as questioned their overall purpose.

The amount of formal, in-class training that the students received was minimal, which hindered their ability to showcase their work in an effective manner. Each year, the amount of open lab hours where students could obtain one-on-one technological assistance diminished, making it even more difficult for students to obtain help with uploading assignments and multimedia files, and creating hyperlinked connections to the standards. Additionally, the structure of the ePortfolio followed a rigid, faculty-created template, which allowed for limited student input and customization. This lack of control over the design aspect of the ePortfolio can contribute to a decreased motivation on the part of the students (Stansberry & Kymes, 2007).

In addition to training issues, there was an observed disparity among faculty members' expectations of students' ePortfolio work. Students often commented that while some instructors provided constructive feedback on their ePortfolio progress and held them accountable for their ePortfolio work, other instructors did not emphasize the process at all. The expectations for ePortfolio development, including faculty assessment procedures, should be uniform throughout the program in order to successfully scaffold the students' reflective thinking (Deneen & Shroff, 2014). Prior to this study, the education program had not conducted an assessment of the students' ePortfolio experiences. After six years of implementation, the time had come to carefully examine and subsequently fine-tune the program in order to best meet the needs of the students. Therefore, an inquiry into the program's strengths and weaknesses was a logical next step. By examining the students' ePortfolio experiences through the use of surveys and interviews, and using the results of the data to create a shared vision for improvement among faculty, the entire system had the potential to improve (Bui & Baruch, 2010).

Thus, general purposes of this study were to understand the impact of the ePortfolio curricular processes from the perspective of the students and offer recommendations for further improvement of the ePortfolio program. In research question 1, we examined general attitudes regarding the ePortfolio program. We hypothesized that attitudes would be generally favorable. In research question 2, we examined whether there would be a relationship between class-level and item-level support for ePortfolio. We hypothesized that item-level support would be dependent on class level. Lastly, in research question 3, we examined whether there would be differences in overall ratings between participants from introductory, intermediate, and capstone courses. We hypothesized that there would be significant differences between the groups.

Method

Design

In this study, we employed a mixed methods research design. Students who were enrolled at three phases of their education at one community college were approached in their classes and invited to participate in a quantitative Likert scale survey and follow-up interview related to their ePortfolio experiences. The first course was the introductory course in the education program sequence in which students created their ePortfolios. The intermediary course, falling approximately midway in the course sequence, was used as the second course. The third course, a capstone course taken at the end of the programmatic sequence, was utilized as the final group. Diversity in ePortfolio experience level was desired for the sample and, therefore, selection was based on participants' course enrollment and willingness to participate. Survey responses were not utilized in the sampling process.

Participants

A total of 67 students responded to the survey, with 11 participants from the introductory course, 18 from the intermediary course, and 38 from the capstone. A sample of nine students participated in qualitative in-person interviews with the researcher. Interviewees expressed participation interest in the informed consent section of the survey. Two interview participants were selected from the introductory course, three from the intermediary course, and four from the capstone course.

Instruments

Assessment of ePortfolio. A 10-item survey instrument was developed to assess the impact of the ePortfolio program. See Appendix A. For each item, there were six response options: 1 = *strongly agree*, 2 = *agree*, 3 = *not sure*, 4 = *disagree*, 5 = *strongly disagree*, and 6 = *not applicable*. Item 8 was reverse coded based on its phraseology. Inter-rater reliability was assessed using Cronbach's Alpha. This instrument possessed strong reliability (Cronbach's $\alpha = 0.846$). Face and content validity were assessed and established using a panel of experts, which included this researcher and two senior faculty members.

Interview Items. In order to obtain a more in-depth picture of their learning experience with ePortfolios, the interviews consisted of 10 open-ended questions. See Appendix B for a complete listing of questions.

Procedures

The rationale for the study, along with the research questions, instruments and consent forms were submitted to the Institutional Review Board prior to data collection. After a rigorous review process, the board deemed the project as not meeting the federal regulations definition of human subjects research and, therefore, it was exempt from further IRB review and oversight. Permission was granted to begin collecting data. New, intermediary, and graduating students enrolled in education courses were invited to participate in the survey and interview in order to determine how their perceptions of the ePortfolio program developed as they progressed through the course sequence.

Survey data and interviews were conducted in the researcher's office. Upon completion, respondents were entered and analyzed using IBM SPSS version 24. The survey questionnaires were completed in 5–10 minutes, based on reading levels. Each interview exchange lasted approximately 30 minutes. During the interviews, students were able to share their experiences and perspectives on the ePortfolio program in a relaxed, natural setting. Responses were transcribed during the interviews, and participants were given the opportunity to review the notes upon completion to ensure that all comments were recorded accurately and ideas were conveyed as they were intended. The student interview protocol was designed to build off of the student survey by eliciting open-ended, descriptive responses to some of the initial close-ended survey questions. The 10 interview questions were linked to the initial program objectives via the themes drawn from the program objectives. Subquestions were prepared in order to ensure that the interviewer addressed the specific information involved in the questioning process and that the interviewees understood the full scope of the questions (Spaulding, 2014).

Results

Survey Results

Research Question 1. In research question 1[1], we examined general attitudes regarding the ePortfolio program. We hypothesized that attitudes for ePortfolio would be generally favorable. Using a chi-square analysis, respondents expressed significant support for the ePortfolio program. They noted the ePortfolio training they received during their first

[1] Note that strongly agree/agree and strongly disagree/disagree were combined prior to conducting the chi-square to reduce the possibility of Type I error.

education course helped them feel prepared to continue their ePortfolio development process (64.6%), the ePortfolio open lab hours were helpful in obtaining technical assistance (52.5%), they understand the various purposes for creating an ePortfolio (82.1%), they felt confident in their ability to upload assignments (64.2%), they felt confident in their ability to hyperlink their assignments to the professional standards (48.5%), they include a rationale reflecting on the ways those assignments helped them develop as a learner (47.7%), they customized their ePortfolio to make it meaningful (73.0%), their final course grade was affected (at least once) as a result of incomplete ePortfolio requirements (50.0%), ePortfolio helped them see their growth as a future teacher (63.5%), and their ePortfolio is an accurate representation of themselves as a future teacher (52.4%). All items were statistically significant at $p < .05$ (see Table 1). These findings support our hypothesis for research question 1.

Table 1. A Chi Square Analysis of Attitudes towards ePortfolio

Item	Agree	Neutral	Disagree
1. The ePortfolio training I received during my first education course helped me feel prepared to continue my ePortfolio development process.	64.6%	7.7%	22.7%***
2. I have found the ePortfolio open lab hours to be helpful in obtaining technical assistance with my ePortfolio.	52.5%	32.8%	14.8%***
3. I understand the various purposes for creating an ePortfolio.	82.1%	11.9%	6.0%***
4. I feel confident in my ability to upload assignments to my ePortfolio.	64.2%	14.9%	20.9%***
5. I feel confident in my ability to hyperlink my assignments to the professional standards	48.5%	21.2%	30.3%*
6. When uploading assignments, I include a rationale reflecting on the ways those assignments helped me develop as a learner.	47.7%	33.8%	18.5%*
7. I have customized my ePortfolio to make it personalized and meaningful to me (photographs, recordings, quotations, personal reflections, etc.).	73.0%	9.5%	17.5%***
8. My final course grade has been affected (at least once) as a result of incomplete ePortfolio requirements.	50.0%	25.9%	24.1%*
9. Developing my ePortfolio has helped me to see my growth as a future teacher.	63.5%	15.9%	20.6%***
10. My ePortfolio is an accurate representation of myself as a future teacher.	52.4%	22.2%	25.4%**

* $p < .05$ ** $p < .01$ *** $p < .001$

Research Question 2. In research question 2[2], we examined whether there would be a relationship between class-level and item-level support for ePortfolio. We hypothesized that item-level support would be dependent on class level. Using a series of chi-square tests for independence, the support for most items was not dependent on class level. There were two exceptions. There was a significant relationship between course level and support for the item, "I have found the ePortfolio open lab hours to be helpful in obtaining technical assistance with my ePortfolio," $X^2_{(4)} = 9.919$, $p = .042$. More specifically, students in intermediate level courses reported significantly less support for this item. There was also a significant relationship between course level and support for the item, "My final course grade has been affected (at least once) as a result of incomplete ePortfolio requirements," $X^2_{(4)} = 11.396$, $p = .022$. More specifically, intermediate and capstone students endorsed this item at significantly higher rates than introductory students. Additionally, the item, "I feel confident in my ability to hyperlink my assignments to the professional standards" trended toward significance, $X^2_{(4)} = 9.136$, $p = .058$ (see Table 2, next page). These results partially support our hypothesis in research question 2.

[2] Note that strongly agree/agree and strongly disagree/disagree were combined prior to conducting the chi-square to reduce the possibility of Type I error.

Table 2. Two-Way Chi Square

	Course Level	Agree	Neutral	Disagree	Total	Chi Square Value
Q1. First education course prepared me…	Capstone	21	4	11	36	
	Intermediate	11	1	7	19	
	Introductory	10	0	0	10	
	Total	42	5	18	65	
						$\chi^2(4) = 7.203, p = .126$
Q2. Open lab hours were helpful…	Capstone	21	6	6	33	
	Intermediate	5	10	3	18	
	Introductory	6	4	0	10	
	Total	32	20	9	61	
						$\chi^2(4) = 9.919, p = .042^*$
Q3. I understand the purposes of ePortfolio…	Capstone	28	6	4	38	
	Intermediate	18	1	0	19	
	Introductory	9	1	0	10	
	Total	55	8	4	67	
						$\chi^2(4) = 5.039, p = .283$
Q4. I feel confident in my ability to upload…	Capstone	24	4	10	38	
	Intermediate	10	5	4	19	
	Introductory	9	1	0	10	
	Total	43	10	14	67	
						$\chi^2(4) = 6.371, p = .173$
Q5. I feel confident in my ability to hyperlink…	Capstone	17	8	13	38	
	Intermediate	6	5	7	18	
	Introductory	9	1	0	10	
	Total	32	14	20	66	
						$\chi^2(4) = 9.136, p = .058$
Q6. I include a rationale…	Capstone	17	11	8	36	
	Intermediate	8	7	4	19	
	Introductory	6	4	0	10	
	Total	31	22	12	65	
						$\chi^2(4) = 2.912, p = .573$

Q7. I have customized my ePortfolio…	Capstone	24	4	8	36	
	Intermediate	12	2	3	17	
	Introductory	10	0	0	10	
	Total	46	6	11	63	
						$\chi^2(4) = 4.561, p = .335$
Q8. Grade affected by incomplete requirements…	Capstone	16	6	11	33	
	Intermediate	10	3	3	16	
	Introductory	3	6	0	9	
	Total	29	15	14	58	
						$\chi^2(4) = 11.396, p = .022^*$
Q9. ePortfolio has helped me to see my growth…	Capstone	19	7	9	35	
	Intermediate	12	2	4	18	
	Introductory	9	1	0	10	
	Total	40	10	13	63	
						$\chi^2(4) = 4.976, p = .290$
Q10. My ePortfolio is an accurate representation of myself…	Capstone	16	7	13	36	
	Intermediate	9	5	3	17	
	Introductory	8	2	0	10	
	Total	33	14	16	63	
						$\chi^2(4) = 7.002, p = .136$

Research Question 3. In research question 3, we examined whether there would be differences in overall ratings between participants from introductory, intermediate, and capstone courses. We hypothesized there would be significant differences in overall ratings between participants from introductory, intermediate, and capstone courses. A one-way ANOVA between subjects was conducted to evaluate overall support for ePortfolio across the introductory, intermediate, and capstone courses. We found significant differences in levels of support for ePortfolio, $F(2, 64) = 4.904$, $p = .01$. A Levene's test of homogeneity of variance yielded significant differences in variance between the groups, $F(2, 64) = 3.154$, $p = .049$. We found significantly more support for ePortfolio among students in the introductory course[3] ($M = 17.76$, $SD = 3.76$) relative to intermediate ($M = 24.85$, $SD = 7.17$) and capstone ($M = 25.71$, $SD = 7.82$) courses (see Tables 3-5). These findings support our hypothesis for research question 3.

[3] Note that lower mean scores indicate greater support as we coded strongly agree as 1, agree as 2, etc.

Table 3. Descriptive Statistics for Overall Mean Scores

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Capstone	38	25.7066	7.82288	1.26904	23.1353	28.2779	12.43	40.00
Intermediate	19	24.8516	7.17252	1.64549	21.3945	28.3086	12.00	37.00
Introductory	10	17.7620	3.75792	1.18836	15.0737	20.4503	11.00	24.00
Total	67	24.2784	7.61358	.93015	22.4213	26.1355	11.00	40.00

Table 4. One Way ANOVA for Overall Mean Scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	508.385	2	254.193	4.904	.010
Within Groups	3317.411	64	51.835		
Total	3825.797	66			

Table 5. Games-Howell Test for Mean Differences

		Mean Difference			95% Confidence Interval	
(I) Group	(J) Group	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Capstone	Intermediate	.85500	2.07800	.911	-4.2074	5.9174
	Introductory	7.94458*	1.73858	.000	3.6678	12.2214
Intermediate	Introductory	7.08958*	2.02974	.005	2.0569	12.1223

Student Interview Results

Several noteworthy themes emerged during the interview process, which can augment the survey data. The first theme related to their current or future growth as learners. Students in the introductory course were uncertain how ePortfolio would help them and viewed it as more of an assessment tool for instructors, rather than as a tool for growth and learning. Students in the intermediary course viewed ePortfolio as a tool for reflecting on past work and revising it, as well as helping them plan for the future and gaining valuable organization skills. Finally, students in the capstone course felt that ePortfolios were useful for looking back on what they've accomplished, but highlighted the completion of the assignments were more essential to their growth than the ePortfolio development process itself. A second concern was that students expressed frustration with the process. They felt that their ePortfolios were unlikely to be viewed

once they left the college and that should their transfer schools use a different ePortfolio platform, there would be no continuity of use.

Students reported that their personal goals for creating an ePortfolio deepened as they advanced through the course sequence. In the initial course, participants generally described reasons related to employment when asked what their personal goals and purposes were for creating an ePortfolio. One participant stated that the ePortfolio could be used so that "an employer could see whether I'm a good candidate." In the intermediary course, participants' goals expanded to include the demonstration of "growth," "hard work" and "to make something of myself." One student viewed their ePortfolio as a form of social media. When he noticed the number of views his ePortfolio had received, he stated, "I wanted to take it seriously." In the capstone course, students tended to view their ePortfolio's purpose as a tool for organizing their work and looking back on what they've accomplished. In particular, the demonstration of these accomplishments for others to see was often mentioned. One student stated that their purpose for creating an ePortfolio was to "show the completion of my fieldwork, observations, and curriculum." Another participant stated that the reason they created an ePortfolio was "just so others could see it—classmates, professors—it's all it's been used for."

Although the students seemed to place more value on the ePortfolio as they advanced through the program, they rarely considered the purposes beyond showcase. When the capstone students were asked whether creating their ePortfolio helped them synthesize ideas in different courses for personal and professional growth, most students were doubtful. One student responded, "The topics were sectioned off so I couldn't make the connection." Another concurred, "There wasn't a way to put ideas together." One participant felt that the ability to compare lesson plans written in different courses was helpful, since they were all uploaded to the ePortfolio. However, they noted that they had not formally reflected on this comparison of work samples through the ePortfolio.

Student participants tended to run into more and more issues with their ePortfolio as they completed their coursework. After their initial training, participants reported minimal to no issues, and felt that they were able to resolve minor issues independently without the assistance of an instructor or lab technician. However, in the intermediary course, participants described many technical issues surrounding granting instructor permissions, uploading audio files and photographs, outdated or missing software, and general frustration with the ePortfolio layout. One participant described the requirements as "extraneous." Another

participant explained that they usually had to show their instructors a screenshot of their ePortfolio from their cell phone in order to prove that they had indeed completed the requirements. By the time students were enrolled in the capstone course, their technical issues multiplied. The issues they encountered included logging in, course enrollment, granting instructor permissions, uploading assignments, formatting when copying and pasting assignments, hyperlinking to standards, uploading audio and photo files, and ineffective or outdated video tutorials. Students generally expressed frustration when describing these issues. One participant said that their initial training was too short and that they left the training not really knowing what to do. Another participant said that they lost course points because they couldn't enroll in the course and grant instructor permission. Most participants said that they attempted to resolve their problems by trying to figure them out on their own or asking a classmate for help. All but one student participant stated that they had never attended the open lab hours for technical assistance.

In the area of professional development, the majority of student participants in the introductory course had only recently been introduced to the NAEYC standards and the ePortfolio process and therefore, participants were unsure whether the ePortfolio helped them or would help them meet the standards. In the intermediary course, their responses were vague and unsure, with one student saying that they didn't know how to hyperlink to the standards. In the capstone course, students were definitively unable to see how linking their assignments to the NAEYC professional standards helped them. They tended to feel that the actual process of completing the assignments helped them meet the standards, but the process of explicitly connecting those assignments to the standards was unhelpful. When asked if they felt that their ePortfolio helped them meet the standards for professional preparation, a participant stated, "The ePortfolio is mostly just a place to upload assignments." One student said that the standards were "taught in the beginning and the end, never in between." Another stated, "I don't fully understand the standards. They're not covered enough." One graduating student participant stated that they didn't even know what the NAEYC professional standards were. Every graduating student interviewed said that they would not feel comfortable with showing their ePortfolio to a potential employer in its current state.

Student participants offered many insightful suggestions when questioned about ideas for improvements to the ePortfolio program. Across all courses, student participants expressed a desire to make their ePort-

folios more personalized, but that the platform prohibited them from doing so. One graduating student stated, "I could have devoted more time to personalizing it if I felt more comfortable with it. I was scared to click something and ruin it." In addition to greater personalization capabilities, students suggested paring down the categories on the template to make it more streamlined, changing the categories or allowing for student control over them, making the template easier to navigate, and making it "look good" aesthetically. Several participants mentioned that they expected the different aspects of the ePortfolio template, such as the biographical section, to be addressed in the individual courses, but they never were. One student suggested requiring all assignments to be uploaded immediately after grading, instead of at the end of the course. She said that having to find everything at the end of the course made it difficult. Another participant offered a helpful solution to the vast technical issues that students face. She proposed a whole-class computer lab visit during the first week of each course "to go over procedures and refresh your memory." This would enable instructors to review the expectations for the course and address any technical issues at the outset, rather than at the end of the semester. Others suggested requiring lab visits instead of suggesting them. Another thought it would be helpful "to make a link course at the beginning, middle and end" because "open lab hours might not fit our schedules."

Discussion

In research question 1, we found that participants expressed favorable attitudes toward the ePortfolio process when completing the survey instrument. Similar to past research (Buzzetto-More & Alade, 2008; Jenson & Treuer, 2014; Orland-Barak, 2005), we found that students felt that the development of an ePortfolio encourages a thoughtful selection and presentation process, as well as deep reflections on those processes. However, the follow-up interviews provided an opportunity to express some concerns. Students expressed concern about their training and how their grades were adversely impacted by missing assignments. As noted above, proper initial training and subsequent technological support is crucial if students are to make the most of their ePortfolio experience (Parker et al., 2012; Ritzhaupt et al., 2010). Our students expressed more concern over this issue.

In research question 2, we found that students expressed more concern over individual items related to technology, hyperlinking, and grade penalties as they progressed through the program. These concerns were

also expressed during the follow-up interviews. To get an idea of overall support for e-Portfolio, in research question 3, we examined overall mean scores across the groups. Consistent with our hypothesis, participants in the introductory course expressed greater overall support for the ePortfolio program relative to participants in the intermediate and capstone courses. Our results are consistent with Wakimoto and Lewis (2019) who found that support for ePortfolio changed as one progressed through their program. With this being said, we feel recommendations to improve the quality of the ePortfolio program are warranted.

Recommendations to Improve the ePortfolio Program

Based on the survey and interview data collected from students, it was recommended that the education program develop an additional course dedicated to learning how to utilize ePortfolio in more meaningful ways. The ePortfolio course objectives should align with the findings from the study in order to address the specific needs of the students. The education program's vision for the ePortfolio program prior to the study was somewhat of a hybrid of several different purposes. Based on the organization of the template, it may have been viewed as that of a showcase portfolio, in which a selection of artifacts from a variety of sources demonstrate an integrated knowledge base, accompanied by a series of reflective statements by the learner about their growth or development (Lewis, 2017). However, the ePortfolio program's emphasis on professional standards encased in a highly structured template places it in the category of documentation portfolio (Matthews-DeNatale, 2014). Although a purpose was not formally defined throughout the ePortfolio program's implementation period, it was primarily utilized as a means of demonstrating students' competencies when completing the university's education program, applying for teaching positions, or transferring to four-year colleges upon graduation.

A clear purpose set by faculty and communicated to students is an integral factor in an ePortfolio's successful implementation (Driessen, 2017; Luther & Barnes, 2015; Ritzhaup, Singh, Seyferth, & Dedrick, 2008; Strudler & Wetzel, 2005a, 2005b). The suggested ePortfolio curriculum should place greater emphasis on developing the ePortfolio as a tool for student learning, reflection and formative self-assessment (Barrett & Wilkerson, 2004). Moreover, it should provide greater opportunities for the development of technological skills, which can be utilized in future professional teaching practices (Darling-Hammond & Snyder, 2000). This purpose should be clearly communicated to students during the ini-

tial training and reinforced throughout the course sequence. As students' intrinsic motivation is directly related to the perceived meaningfulness of the task (Walker, Greene, & Mansell, 2006), faculty teaching the ePortfolio course should dedicate time to exposing students to the personal reasons for creating an ePortfolio and increasing students' ability to find intrinsic meaning in the related tasks (Parker et al., 2012).

As students come to develop intrinsic motivation for creating an ePortfolio through the program's shift in purpose, they should be granted more autonomy over the look and layout of their ePortfolio. Providing students with the ability to personalize their ePortfolio is directly related to their motivation and active engagement (Ring, Weaver, & Jones, 2008). The current template was rigid, with categories that were unable to be modified by students. In order to foster autonomy and create a more student-centered process, several sample ePortfolio templates should be showcased at the beginning of the ePortfolio course curriculum, with students being given the option to choose the format that best meets their needs and aesthetic preferences.

The ePortfolio course curriculum should dedicate time to working with students on the professional teaching standards, assisting them in considering the connection between the assignments they complete during their coursework and their own professional development through the use of ePortfolios. The alignment of course assignments to the professional standards has been shown to be a confusing process for many college students (Silver et al., 2002). Student interview participants shared that their work with the professional standards was often limited to the first and last course, with little attention in the intermediary courses. In addition to attending to the professional standards in the ePortfolio course, it is recommended that instructors in all education program courses provide opportunities for students to revisit the standards and reflect on how the work they've completed helped them advance their professional development in those areas. This desire to connect their ePortfolio work to program coursework was consistently expressed by students during the interviews.

Once students have mastered the technical aspects of their ePortfolio development process, had ample opportunities to make connections between their learning and the professional standards, and have been granted autonomy over the look and layout of their product, they should begin to consider ways in which they can showcase their work to a wider audience. We recommend that the ePortfolio course focus on methods of social pedagogy by engaging students in the process of collaboration

and communication of ideas with their peers, instructors, and the professional community (Eynon et al., 2014a). When students become aware that others are viewing their ePortfolio, its educational value increases dramatically (Eynon et al., 2014a). Social pedagogical practices such as peer review and response, team-based problem solving, and presentation to external audiences can deepen students' reflective practices and enable them to consider connections across their courses and college learning experience as a whole (Bass & Elmendorf, 2012).

One of the ePortfolio program's main objectives was to provide students with opportunities for professional development. The programmatic outcomes listed a proposed series of activities and training sessions to teach students techniques for highlighting and presenting their ePortfolios to prospective employers. In the education program, fieldwork course instructors may elect to provide students with the opportunity to showcase their experiences and reflections on working with children in real classrooms through an ePortfolio presentation. Taking it a step further, students may present portions of their ePortfolio directly to cooperating teachers and school administrators in order to provide feedback to the school community about their growth. Alternatively, students may present their development as educators at various points during the course sequence, which can provide them with useful feedback from their peers and instructors and enable them to set goals for the future. Social pedagogical practices such as these can provide instructors with an authentic means of assessing students' progress through real-world learning experiences.

Integration between the ePortfolio development process and the education program coursework is crucial to the program's success. Participants often mentioned a disconnection between their ePortfolio work and their coursework. One of the ePortfolio program's planned activities was to design special ePortfolio curriculum modules to be infused into the instructional process. The intention was to form a faculty planning committee to develop these activities and implementation objectives. It was recommended that the program convene this committee in order to increase faculty buy-in through a collaborative process. The support and value placed on ePortfolios by faculty and the institution is one of the most important influences on whether students view ePortfolios as a contributing factor to their learning process (Luera, Brunvand, & Marra, 2016; Luther & Barnes, 2015; Tosh, Light, Fleming, & Haywood, 2005; McWhorter, Delello, Roberts, Raisor, & Fowler, 2013). When students sense that their instructors and the program as a whole are committed to

the ePortfolio program and its processes are cohesive across all courses, they will likely place more value in it. By placing a greater focus on integrating the ePortfolio process into the coursework through a collaborative effort, students may form greater connections between course assignments and benefit from a stronger support system.

Continuous refinement of an ePortfolio initiative is necessary in order to ensure its effectiveness toward meeting the intended outcomes (Luther & Barnes, 2015). Education program leaders were encouraged to consider implementing the recommended improvements outlined in this study when meeting to discuss the future of the ePortfolio program. By designing curricular and instructional improvements to the program, students are expected to gain a clearer purpose for creating an ePortfolio and develop a sense of autonomy and intrinsic motivation while working on it. Through structured, ongoing support, students can strengthen their technological skills, which can be applied to their work with children in early childhood and elementary classrooms. Students' well-developed ePortfolios can be used to reflect on their growth and to showcase their skills as professional educators in real-world learning situations.

Limitations and Future Research

As with all studies, our research study has several limitations. First, we utilized a relatively small sample size. As such, we are limited in our ability to generalize beyond our study. Moreover, there are unequal sample sizes for each group. Particularly, the disproportionality of the introductory course sample as it relates to the other groups can be attributed to the fact that this course was open to the entire college, whereas the others solely enrolled education majors. This led to many students in the introductory course being excluded from participation, as they had not been required to create education-related ePortfolios. While our unequal sample size is due to the university's enrollment process, it could have resulted in reduced sensitivity on the item-level analyses in research question 2. Lastly, time constraints prevented the research from carrying over to the following semester, where a larger sample could have been drawn. We suggest that future studies pertaining to ePortfolio perceptions and experiences allow for longitudinal data collection to ensure larger sample sizes.

A second limitation of this study is that our research was based on student attitudes. This limits our ability to draw conclusions about the program's overall effectiveness as it relates to factors such as assessment of programmatic learning outcomes, the effects of ePortfolio use on

teaching employment rates, and in-service teaching impact. Possible future studies surrounding the use of ePortfolios in teacher education may include a more diverse stakeholder sample, including faculty members, departmental administrators, and community school leaders, whose perspectives can create a well-rounded picture and help shape programmatic improvements.

A third limitation is that our sample is comprised of community college students. This limits our ability to generalize our findings to four-year colleges and graduate programs. Students who enroll in community colleges tend to have unique needs and experiences. As such, we recommend that in future studies, researchers focus on exploring similarities and/or differences across community college, four-year, and graduate programs. This could shed light on potential programmatic issues related to the specific needs of two-year, four-year, and graduate students.

References

Apostel, S. (2015). Addressing social media presence: Shifting from place to space in career/transfer ePortfolios. *Journal of Faculty Development*, *29*(2), 63–69.

Barrett, H., & Knezek, D. (2003, April). *E-portfolios: Issues in assessment, accountability and pre-service teacher preparation.* Paper presented at the American Educational Research Association Conference, Chicago, IL.

Barrett, H., & Wilkerson, J. (2004). Conflicting paradigms in electronic portfolio approaches [Web log post]. Retrieved from http://electronicportfolios.com/systems/paradigms.html

Bass, R., & Elmendorf, H. (2012). *Designing for difficulty: Social pedagogies as a framework for course design* (White paper). Retrieved from https://blogs.commons.georgetown.edu/bassr/social-pedagogies

Beard, C., & Wilson, J. (2006). *Experiential learning.* London, UK: Kogan Page.

Bhika, R., Francis, A., & Miller, D. (2013). Faculty professional development: Advancing integrative social pedagogy using ePortfolio. *International Journal of EPortfolio*, *3*(2), 117–133.

Blakely, B. J. (2016). Voicing the e in WOVE: Improving reflection in ISU-Comm foundation courses eportfolios. *International Journal of EPortfolio*, *6*(2), 139–146.

Bui, H., & Baruch, Y. (2010). Creating learning organizations in higher education: Applying a systems perspective. *The Learning Organization, 17*(3), 228–242. doi:10.1108/09696471011034928

Buzzetto-More, N. (2010). Assessing the efficacy and effectiveness of an e-Portfolio used for summative assessment. *Interdisciplinary Journal of E-Learning & Learning Objects*, *6*, 61–85.

Buzzetto-More, N., & Alade, A. (2008). The pentagonal e-portfolio model for selecting, adopting, building, and implementing an e-portfolio. *Journal of Information Technology Education*, *7*.

Chen, H. L., Light, T. P., & Ittelson, J. C. (2012). *Documenting learning with eportfolios: A guide for college instructors.* San Francisco, CA: Jossey-Bass.

Chitpin, S., & Simon, M. (2009). "Even if no-one looked at it, it was important for my own development": Pre-service teacher perceptions of professional portfolios. *Australian Journal of Education (ACER)*, *53*(3), 277–293. doi:10.1177/000494410905300306

Clark, J. E., & Eynon, B. (2009). ePortfolios at 2.0: Surveying the field. *Peer Review: Emerging Trends and Key Debates in Undergraduate Education, 11*(1), 18–23.

Conefrey, T. (2017). LEADing the way with ePortfolios in a first-generation learning community. *International Journal of EPortfolio*, *7*(2), 161–173.

Cowan, J., & Peacock, S. (2017). Integrating reflective activities in eportfolios to support the development of abilities in self-managed experiential learning. *Reflective Practice*, *18*(5), 655–672. doi:10.1080/14623943.2017.1307723

Crichton, S., & Kopp, G. (2008). The value of eJournals to support ePortfolio development for assessment in teacher education. *Canadian Journal of Learning and Technology*, *34*(3), 3. doi:10.21432/t2ts3h

Darling-Hammond, L., & Snyder, J. (2000). Authentic assessment of teaching in context. *Teaching and Teacher Education, 16*(5–6), 523–545. doi:10.1016/s0742-051x(00)00015-9

Dawson, K. (2006). Teacher inquiry: A vehicle to merge prospective teachers' experience and reflection during curriculum-based, technology-enhanced field experiences. *Journal of Research on Technology in Education, 38*(3), 265–291. doi:10.1080/15391523.2006.10782460

Deneen, C. C., Brown, G. T. L., & Carless, D. (2018). Students' Conceptions of Eportfolios as Assessment and Technology. *Innovations in Education and Teaching International*, *55*(4), 487–496.

Deneen, C. C., & Shroff, R. (2014). Understanding successes and difficulties in program-level ePortfolios: A case study of two professional degree programs. *Review of Higher Education & Self-Learning*, *7*(25), 145–160.

Dominguez, G. D. (2014). L@jOst - a theoretical approach: Types and purposes. In R. Egetenmeyer, & L. Malita (Eds.), *Students' ePortfolio for entering into the labour market* (pp. 7–18). New York, NY: Peter Lang.

Driessen, E. (2017). Do portfolios have a future? *Advances in Health Sciences Education, 22(1),* 221–228. doi:10.1007/s10459-016-9679-4

Egetenmeyer, R., & Malita, L. (2014). *Students' ePortfolio for entering into the labour market*. New York, NY: Peter Lang.

Eynon, B., Gambino, L., & Torok, J. (2014a). What difference can ePortfolio make? A field report from the Connect to Learning Project. *International Journal of ePortfolio, 4.* Retrieved from http://www.theijep.com/pdf/IJEP127.pdf

Eynon, B., Gambino, L., & Torok, J. (2014b). Reflection, Integration, and ePortfolio Pedagogy. Retrieved from http://c2l.mcnrc.org/pedagogy/ped-analysis/

Fenwick, T. J. (2000). Expanding conceptions of experiential learning: A review of the five contemporary perspectives on cognition. *Adult Education Quarterly, 50*, 243–272. doi:10.1177/07417130022087035

Flanigan, E. J. (2012). ePortfolios and technology: Customized for careers. *International Journal of Information and Communication Technology Education*, *8*(4), 29–37. doi:10.4018/jicte.2012100103

Friedman, D. (2012). *Creating an early childhood education portfolio.* Belmont, CA: Wadsworth.

Harden, S. M., Allen, K. C., Chau, C. N., Parks, S. L., & Zanko, A. L. (2012). Experiential learning in graduate education: Development, delivery, and analysis of an evidence-based intervention. *Creative Education, 3*, 649–657. doi:10.4236/ce.2012.35095

Jenson, J. D., & Treuer, P. (2014). Defining the ePortfolio: What it is and why it matters. *Change: The Magazine of Higher Learning, 46(2),* 50–57. *doi:10.1080/00091383.2014.897192*

Knight, W. E., Hakel, M. D., Gromko, M., & Association for Institutional Research. (2008). *The Relationship Between Electronic Portfolio Participation and Student Success. Professional File Number 107, Spring 2008. Association for Institutional Research*. Association for Institutional Research.

Lewis, L. (2017). ePortfolio as pedagogy: Threshold concepts for curriculum design. *E-Learning and Digital Media, 14*(1–2), 72–85. doi:10.1177/2042753017694497

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.

Luther, A. E., & Barnes, P. (2015). Development and sustainability of ePortfolios in counselor education: An applied retrospective. *International Journal of ePortfolio, (5)*1, 25–37.

Masters, J. (2013). Scaffolding pre-service teachers representing their learning journeys with ePortfolios. *Journal of Learning Design, 6*(1), 1–9. doi:10.5204/jld.v6i1.115

Matthews-DeNatale, G. (2014). Are we who we think we are? ePortfolios as a tool for curriculum redesign. *Journal of Asynchronous Learning Networks, 17*(4), 1–16. doi:10.24059/olj.v17i4.395

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*, 253–286.

Miller, R., & Morgaine, W. (2009). The benefits of ePortfolios for students and faculty in their own words. *Peer Review: Emerging Trends and Key Debates in Undergraduate Education, 11*(1), 8–12.

Munday, J. (2014). An embedded ePortfolio in a Master's degree: Is it working? *International Journal of ePortfolio, 7*(2), 175–185.

National Association for the Education of Young Children (2009). *NAEYC standards for early childhood professional preparation.* Retrieved from https://www.naeyc.org/our-work/higher-ed/standards

National Council Accreditation for Teacher Education. (2014). *FAQ about standards*. Retrieved from http://www.ncate.org/standards/NCATEunitstandards/FAQAboutStandards/tabid/406/default.aspx

Orland-Barak, L. (2005). Portfolios as evidence of reflective practice: What remains "untold." *Educational Research, 47*(1): 25–44. doi:10.1080/0013188042000337541

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

Pasquerella, L. (2017). Editorial: Welcoming IJeP and PEARL to AAC&U. *International Journal of EPortfolio, 7*(2), 111–112.

Plaisir, J., Hachey, A., & Theilheimer, R. (2011). Their portfolios, our role: Examining a community college teacher education digital portfolio program from the students' perspective. *Journal of Early Childhood Teacher Education, 32*. 159–175. doi:10.1080/10901027.2011.572231

Ring, G., Weaver, B., & Jones, J. (2008). Electronic portfolios: Engaged students create multimedia-rich artifacts. *Journal of the Research Centre for Educational Technology, 4*(2). Retrieved from https://eportfolio.aacu.org/articles/electronic-portfolios-engaged-students-create-multimedia-rich-artifacts/

Ritzhaupt, A. D., Singh, O., Seyferth, T., & Dedrick, R. (2008). Development of the electronic portfolio student perspective instrument: An e-portfolio integration initiative. *Journal of Computing in Higher Education, 19*(2), 47–71. doi:10.1007/BF03033426

Rivera, J., & Loebick, K. (2017). Integrating high impact practices: Recognizing attributes and overcoming obstacles in learning ePortfolios. *Experiential Learning & Teaching in Higher Education (ELTHE): A Journal for Engaged Educators, 1*(2), 25–50.

Rogers, C. R. (1969). *Freedom to learn*. Columbus, OH: Merrill.

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.

Sanchez, R. J., Zelezny, L., & Junn, E. (2013). Guest editors: Promising practices for increasing underrepresented students' retention and graduation. *Metropolitan Universities, 24*(2), 5–8.

Sherry, A. C., & Bartlett, A. (2005). Worth of electronic portfolios to education majors: A "two by four" perspective. *Journal of Educational Technology Systems, 33*(4), 399–419. doi:10.2190/FCCM-ET90-FPDJ-040F

Silver, E. A., Mesa, V., Banken, B. M., Mairs, A., Morris, K. A., & Star, J. (2002, April).

Characterizing teaching and assessing for understanding in middle grades mathematics: An examination of best practice portfolio submissions to NBPTS. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.

Singer-Freeman, K., & Bastone, L. (2017). Changing their mindsets: ePortfolios encourage application of concepts to the self. *International Journal of EPortfolio, 7*(2), 151–160.

Spaulding, D. T. (2014). *Program evaluation in practice: Core concepts and examples for discussion and analysis.* San Francisco, CA: Jossey-Bass.

Stansberry, S. L., & Kymes, A. D. (2007). Transformative learning through "Teaching with Technology" electronic portfolios. *Journal of Adolescent & Adult Literacy, 50*(6), 488–496. doi:10.1598/JAAL.50.6.6

Strudler, N., & Wetzel, K. (2005a). The diffusion of electronic portfolios in teacher education: Issues of initiation and implementation. *Journal of Research on Technology in Education, 37*(4), 411–433. doi:10.1080/15391523.2005.10782446

Strudler, N., & Wetzel, K. (2005b). Costs and benefits of electronic portfolios in teacher education: Faculty perspectives. *Journal of Computing in Teacher Education, 24*(4), 135–142.

Tindall-Ford, S., Waters, K., & Johnson, N. F. (2010). An evaluation of a web-based ePortfolio system in an Australian pre-service teacher education program. *International Journal of Learning*, *17*(4), 297–308.

Tosh, D., Light, T. P., Fleming, K., & Haywood, J. (2005). Engagement with electronic portfolios: Challenges from the student perspective. *Canadian Journal of Learning and Technology, 31*(3). Retrieved from https://www.cjlt.ca/index.php/cjlt/article/view/26492/19674

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 & Behaviour*, *15*(4), 10208–102219.

Wakimoto, D. K., & Lewis, R. E. (2019). School counselors' changing perceptions of ePortfolios: From graduate students to professionals. *Internet & Higher Education*, *41*, 45–50. doi:10.1016/j.iheduc.2019.01.002

Walker, C., Greene, B., & Mansell, R. (2006). Identification with academics, intrinsic/extrinsic motivation, and self-efficacy as predictors of cognitive engagement. *Learning and Individual Differences, 16*(1), 1–12. doi:10.1016/j.lindif.2005.06.004

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

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.

Wolf, K., & Dietz, M. (1998). Teaching portfolios: Purposes and possibilities. *Teacher Education Quarterly, 25*(1), 9–23.

Wray, S. (2007). E-portfolios in a teacher education program. *E-Learning*, *4*(1), 40–51. doi:10.2304/elea.2007.4.1.40

Wray, S. (2008). Swimming upstream: Shifting the purpose of an existing teaching portfolio requirement. *The Professional Educator, 32*(1), 35–50.

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), 28–32.

Young, D. (2008, June). *ePortfolios in education: A cause for reflection*. Paper presented at the 2008 SOLSTICE Conference, Edge Hill University.

Appendix A

The following 10 items comprised the student survey, each with six answer choices to include *strongly agree*, *agree*, *not sure*, *disagree*, *strongly disagree*, and *not applicable*:

1. The ePortfolio training I received during my first education course helped me feel prepared to continue my ePortfolio development process.
2. I have found the ePortfolio open lab hours to be helpful in obtaining technical assistance with my ePortfolio.
3. I understand the various purposes for creating an ePortfolio.
4. I feel confident in my ability to upload assignments to my ePortfolio.
5. I feel confident in my ability to hyperlink my assignments to the professional standards.
6. When uploading assignments, I include a rationale reflecting on the ways those assignments helped me develop as a learner.
7. I have customized my ePortfolio to make it personalized and meaningful to me (photographs, recordings, quotations, personal reflections, etc.).
8. My final course grade has been affected (at least once) as a result of incomplete ePortfolio requirements.
9. Developing my ePortfolio has helped me to see my growth as a future teacher.
10. My ePortfolio is an accurate representation of myself as a future teacher.

Appendix B

1. How has the ePortfolio development process within the education program been going for you?
2. Has your ePortfolio helped you grow or develop as a learner? Explain.
3. What are your personal goals/purposes for creating an ePortfolio?
4. In what ways have you been trained/prepared to create an ePortfolio in the education program?
5. What specific issues have you encountered when working on your ePortfolio? How have you addressed these issues?
6. Have your overall course grades been impacted by your ePortfolio development? Explain.
7. Has your ePortfolio helped you meet the standards for professional preparation? Explain.
8. Would you feel confident presenting your ePortfolio in its current state to a potential employer or professor at a four-year college? Why or why not?
9. What changes would you make to the ePortfolio template if you could? What changes would you make to the ePortfolio development process?
10. Has your ePortfolio enabled you to make connections between ideas among courses? Explain.