Graduate Students' Perceptions of Factors that Contributed to ePortfolios Persistence Beyond the Program of Study

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This study examined the factors that contributed to ePortfolio persistence in an online program from data collected in 2016 (Thibodeaux, Harapnuik, & Cummings, 2017) and again in 2018. A myriad of research points to learning portfolios as having transformational power; however, many traditional instructional models that use ePortfolios in higher education downplay the significance and transformational learning that effective ePortfolios offer. To research this phenomenon, a convergent, parallel mixed-methods design was used to gather data from an online program in order to explore the learning conditions and context of ePortfolio usage over multiple years. Results indicated that real-world projects and authentic artifacts, the ePortfolio used as a career tool, and management of the ePortfolio were common factors identified in studies that contributed to continued use of the ePortfolio. Findings also revealed that learner autonomy, control, and agency, as well as continued opportunities for choice and voice, led to increased appreciation and ownership of the ePortfolio beyond the program of study.

In the past several years, ePortfolios became the 11th high impact practice influencing the educational landscape in higher education because of their power to transform learning (Association for American Colleges and Universities, 2016; Kuh, 2016; Mueller & Bair, 2018). ePortfolios can enhance marketability skills, career development, and professional identity of graduates and therefore, it is not surprising that ePortfolios are increasingly being used in higher education institutions around the globe (Watty & McKay, 2016). Yet, very few instructors use the ePortfolio as an interactive and integrative tool within the learning environment (Mueller & Bair, 2018). Many students still believe that learning is simply information reproduction, regurgitation of ideas, and acquisition of knowledge and content, and less about transformation (Amory, 2014). The former President of the Association of Authentic, Experiential, and Evidence-Based Learning (AAEEBL) organization argued that it was imperative that stakeholders and providers understand the value and "transformational power of ePortfolios" or ePortfolios will become likened to assessment and learning management systems (Batson, 2016, para. 14). *Transformational learning* involves active engagement with the learning process, contribution to the social aspect of learning, and understanding of content that enables learners to build newfound concepts that will validate and move their own thinking forward (Mezirow, 1997). Therefore, it is incumbent upon schools of education to consider models of teaching and learning that have a broader impact on students' intellectual domains.

Research reveals that traditional teaching and learning models use "content driven, factual . . . [and] externally devised curriculum specifications" (Poole et al., 2018, p. 12) which do not provide significant learning environments that incorporate constructivist principles and collaborative learning opportunities essential to the learning experience (Thibodeaux, Harapnuik, & Cummings, 2019a). According to Poole et al. (2018), if ePortfolios are to be "owned" by the learner, a review of current standardized, template-based ePortfolios in conjunction with real and genuine authentic learning assignments are necessary to effectively align course and program learning outcomes. For this reason and many others, our research team decided that replicating the 2016 study by Thibodeaux, Harapnuik, and Cummings (2017) would allow us to investigate the factors that contributed to both continued and discontinued use of ePortfolios beyond the program of study. In the current study, ePortfolios were an integral part of the learning process within a significant learning environment that gave learners choice, ownership, and voice through authentic learning opportunities (COVA).

Literature Review

In this literature review, we examine the use of ePortfolios as a learning portfolio and provide a description of the theoretical framework grounded in constructivism and collaborative learning environments used in conjunction with the COVA learning approach (i.e., choice, ownership, and voice through authentic learning opportunities). We also examined research to identify factors that contributed to deeper and continued use of ePortfolios beyond the students' program of study to understand the optimal conditions in which students thrive using ePortfolios.

Learning Portfolios

Harapnuik (2015) defined ePortfolios as a "learner's digital evidence of meaningful connections"

(para.1). ePortfolios offer learners opportunities to produce signature work that includes sense and meaning-making of their own ideas through authentic learning experiences when posting and sharing those experiences (Matthews-DeNatale, Blevins-Bohanan, Rothwell, & Wehlburg, 2017; Thibodeaux, Harapnuik, & Cummings, 2019b; Watson, Kuh, Rhodes, Light, & Chen, 2016). Further, ePortfolios provide opportunities for engaged learning and social collaboration to meet academic and career goals through analysis, synthesis, and evaluation of one's own learning experience (Mueller & Bair, 2018). Additionally, aligning reflection and discourse to learning outcomes and objectives are key to learner growth when integrating portfolios academically (Mezirow, 1997).

ePortfolios should not be disconnected from the curriculum (Yancey, 2016) acting as a "bolted on" task to the existing learning environment (Papert, 1993). Otherwise, according to Papert (1993), ePortfolios will take on the effect of strapping a jet engine onto a horse cart where the jet engine will just shake apart the cart and the horse will get angry because it is unable to move forward. For this reason, it is incumbent upon learning facilitators to use and align ePortfolios to learning outcomes that lead to authentic application of ideas in genuine settings (Yancey, 2016; Thibodeaux et al., 2019b). If ePortfolios are bolted onto the learning environment, they can easily become a tool relegated to assessment of knowledge and information retrieval, which inhibits the full potential of using ePortfolios as learning tools (Roberts, Maor, & Herrington, 2016). Buyarski, Oaks, Reynolds, & Rhodes (2017) pointed out that ePortfolios in higher education are often categorized or limited to particular silos such as communication, problem-solving, writing, and inquiry portfolios. While these individual skills are necessary, Buyarski et al. (2017) argued that ePortfolios in silos lack the integration of lifelong learning skills and are further limited by the traditional prescriptive "check-the-box" learning approach.

Based on our own research and experience, the following sections describe more in-depth the COVA learning approach that was first mentioned in the introduction. The COVA learning approach gives ownership and control back to the learner through authentic learning opportunities that are purposefully designed to promote self-directed and lifelong learning.

Theoretical Framework

The COVA learning approach is a collaborative, learner-centered approach that is grounded in the learning philosophies of Dewey, Bruner, Piaget, Papert, and Bandura. The approach uses active and authentic learning opportunities through the creation of significant learning environments to give learners control and ownership of their learning. The approach also emphasizes that learning occurs most deeply through engagement in collaborative thinking and problem solving that utilizes feedback and feedforward from instructors and peers. The latest iteration of the COVA learning approach was formalized by Harapnuik, Thibodeaux, and Cummings in 2015 and is based on a summary of the key Inquisitivism fundamentals established through the research of Harapnuik in the late 1990s and early 2000s (Harapnuik, 2004, 2008, in press). Creating (C) significant (S) learning (L) environments (E) where the learner is given choice (C), ownership (O), and voice (V) through authentic (A) learning opportunities is also referred to as the CSLE+COVA framework (Harapnuik, 2017). The use of authentic learning opportunities such as the ePortfolio becomes the catalyst for giving learners choice, ownership, and voice. While the COVA learning approach supports student-centered learning environments, to be truly effective, these types of environments must purposefully employ backward design principles that incorporate the proper alignment of learning outcomes, activities, and assessments. As such, immersing learners in the CSLE+COVA learning framework has widespread implications for deeper learning through constructivist principles, collaborative learning, deepening ownership, and true, authentic learning opportunities. While this brief description shares a snapshot of the foundation for this approach, the subsequent sections will outline how the COVA learning approach is used as the framework for our program and plays a role in our research focus and inquiry for this study.

Constructivism

Based on core ideas established by Carl Rogers in the late 1960s, Bates (2019) described constructivism as one's ability to exercise conscious thought, free will, and social learning where learning is personal, new ideas are tested, and knowledge is constructed from new experiences that build upon previous experiences. Prior to Rogers, Dewey (1910) described learning as the ability to link prior knowledge to relevant knowledge through collaborative learning experiences. Likewise, Piaget revered the learner as the "constructor" of knowledge wherein learning is derived from the making of meaning or knowing and assimilations are created through intellectual and problem-solving experiences (Dewey, 1910; Piaget, 1950). However, it was Piaget (1950) who made the argument that learning does not only occur in one's own mind through cognitive schemes. Building on this thinking decades later, Schrader (2015) claimed that integrative experiences and active engagement help the

learner mold and shape their thinking to include social interactions that offer additional opportunities for learning. According to McWilliams (2016), constructivists postulate that humans have pre-conceived ideas, notions, and belief systems that are molded and shaped through choices and social connections and claim that the reality of phenomena in our environment is our perceived truth. Further, similar to Rogers, Jonassen (2006) argued that meaningful learning relies on the construction of ideas and experiences that rely on sociocultural influence to generate new ideas, epistemology, and phenomenology. Embracing the aforementioned historical perspectives, the COVA learning approach is deeply rooted in constructivism and relies on (a) the process of learning and meaning making, (b) the conditions and context in which optimal learning environments can thrive, (c) active engagement in the learning process from principles to problem-solving, and (d) developing new avenues of thinking for future pathways (McWilliams, 2016; Thibodeaux et al., 2017).

Collaborative Learning Opportunities

According to Mezirow (1997), learners must become "autonomous agents in a collaborative context" (p. 8). Likewise, Bandura (2000) proposed that learning is dependent on social systems where collective learning provides opportunities to build self-efficacy. Historically, teaching models ignore this collaborative and transformative focus and tend to be based on content, knowledge, and skills and less about progress, growth, and changes in disposition. This misalignment subsequently leads to the use of an ePortfolio as an externally driven and prescriptive tool (Poole et al., 2018). In contrast, Pitts and Lehner-Quam (2019) suggested that across pedagogical practices and disciplines, ePortfolio implementation should be embedded in socially integrative learning environments that provide opportunities for engagement and collaboration. Based on an ePortfolio social pedagogy ecosystem, Pitts and Lenher-Quam (2019) determined that construction and communication of understanding how to share one's learning with an authentic audience is integral to integrative learning experiences. Furthermore, for students to delve deeper into their learning, ePortfolios should be connected to reflective practice (Pitts & Lehner-Quam, 2019) and social constructivist principles (McWilliams, 2016).

Choice

Dewey (1916) advocated that learners must be given choice if they want to develop meaning and purpose in their learning. According to Buchem, Tur, and Hölterhof (2014), as learners are given more choice during the

learning process, their own purpose, and the content they produce, control is shifted from the organization to the learner and intrinsic motivation is elevated. Shifting control to the learner means allowing for choice of content and sequence of steps and learning tools to support the learning process (Buchem et al., 2014). To understand the value of ePortfolios, learners must be able to make decisions about what should be included to achieve learning outcomes (Roberts et al., 2016). Further, overly prescriptive ePortfolios built from templates and rigid guidelines limit the value of ePortfolios to a checklist of items to complete (Munday, 2017). While instructional design (ID) frameworks provide choices such as control of the sequence of topics, level and degree of difficulty, pacing of content, display and viewing of materials, and learning materials support; ID frameworks strengthen learner dependence on the system and offer very little control and ownership of the learning environment itself (Buchem et al., 2014). Creative expression and value are critical to engagement with the ePortfolio; otherwise, learners will not invest in themselves and the ePortfolio becomes another summative assessment in their program of study (Matthews-DeNatale et al., 2017).

Ownership

According to Andrus et al. (2017), taking ownership of one's ePortfolio is linked to reflection, autonomy, and self-efficacy. As such, ePortfolios can give learners ownership of their ideas through active learning and engagement (Watson et al., 2016). Buchem et al. (2014) argued that learning approaches that call for a learner-centered environment are effective because these (emancipatory) approaches emphasize autonomy and control of the learning process. Students who choose to engage with the ePortfolio in these types of learner-centered environments and are reflective and innovative will far exceed learning outcomes (Mueller & Bair, 2018). Taking ownership of the ePortfolio can harness and "enable deeper explanations of 'self' and development over time" (Munday, 2017, p. 178); therefore, it is vital that learners understand the purpose and invest in their ePortfolio so they will value their own learning and development (Roberts et al., 2016). According to Matthews-DeNatale et al. (2017), students who reflect and participate in integrative learning experiences will take ownership of their learning and think more deeply as a result.

Voice

Discovering one's voice is critical to transformational learning (Mezirow, 1997). Mezirow (1997) defined autonomy as the process of becoming critically reflective and that one's own understanding

builds values and confirms one's own thinking, which ultimately leads to transformational learning. Further, Mezirow argued that autonomy is required for learning to be productive. In ePortfolio learning environments, reflection constitutes the learner making connections through authentic learning experiences (Landis, Scott, & Kahn, 2015), the examination of personal belief systems, and development of self-efficacy (Bandura, 1977). Giving learners a voice through reflection and social reciprocity helps students connect their learning experiences to self and to others (Eynon, Gambino, & Török, 2014). Therefore, if thinking and reflecting are not connected to the larger picture of what students are trying to achieve, they may never assess their own learning on a metacognitive level, which impacts their ability to become self-regulated learners (Steiner, 2016).

Authenticity

Steiner (2016) described authentic activities as those that require collaborative problem-solving skills that are relevant, partially unstructured, and involve real-world opportunities for the application of ideas in real-world settings. Ideally, authentic learning allows learners opportunities to make decisions as they reflect and collaborate on those ideas (Roberts et al., 2016). Authentic learning experiences described this way resonate with Dewey's (1916) thinking that experiential learning involves inquiry and the making of meaning through a cyclical process of experience, reflection, conceptualization, and experimentation, which is then repeated. Combining Dewey's philosophy of learning and the theory of constructivism, learning is constructed from experiences that are organic to the environment in which concepts and prior knowledge are applied from one experience to the next. Amory (2014) noted that while authentic learning presents challenges in the beginning, students described that they learned more than they expected to learn when provided these opportunities.

The Digital Learning and Leading Online Program

The Digital Learning and Leading (DLL) program is an online, 36-hour degree program at a regionally accredited institution in the southern United States. Currently, the program offers 12 courses, one of which is specifically designated for ePortfolio design and development using the COVA learning approach. The ePortfolio course was designed to allow learners to select the tools and platform desired in the program and to organize, structure, and present their chosen learning experiences through their ePortfolios. The ePortfolio course allows learners opportunities to revise and restructure their previous learning experiences, find their voice, build out their social media connections, post blogs, and share authentic projects from their own

work. In all other courses in the program, learners use the ePortfolio to share their progress on authentic projects they produce. Learners personally organize and reflect on their learning while collaborating and providing feedback to one another.

Students in the DLL program develop innovation plans that become the foundational authentic learning opportunity that allows them to experience real and genuine learning through implementation. Elective courses offer students opportunities to investigate and research ideas around their innovation plans to further advance their knowledge and expertise and add to those plans. As stated in the literature review, the main pedagogical connective thread throughout the program is the COVA learning approach as the context for each learning experience. More specifically, students use the ePortfolio to share and promote their own ideas and innovation plans to their audience in their own organizations. At the end of the program, students are required to submit an ePortfolio capstone that shares personal reflections about their learning journey as they authentically applied and implemented their innovation plans in their own organizational settings and school districts. Additionally, the ePortfolio capstone captures their overall experience in the program and plays a role in whether or not they continue to use their ePortfolio.

To set the context, this study sought to reveal the factors that contributed to the discontinued use, and continued use, of ePortfolios by graduate students beyond their program of study. By collecting and analyzing empirical evidence, we sought to better understand how the COVA learning approach impacted key items identified as important factors that helped our students learn and grow using ePortfolios in both studies. Our goal is to enhance the learning environment for our students as we enter into the next phase of restructuring and redesigning our program, but also to inform others who are looking to establish ePortfolios as part of their program.

Our Research Focus and Study Questions

To evaluate our current approach, our research aimed to provide empirical evidence to determine the broader impact of ePortfolio usage as part of a program of study; however, first we must make the conditions clear. In the 2016 study, the previous program requirements for the ePortfolio included rigorous reflective practice, transference of ePortfolio learning for PK-12 learners, and differentiated assessment. In the previous study, much of the contents of the ePortfolio was dictated by program and accreditation requirements where posting to the ePortfolio was marked by a row on the rubric. While there was some degree of agency involved, students did not have opportunities that allowed them to

experience choice, ownership, and voice through the ePortfolio as they did in the 2018 study.

In the DLL program as part of the 2018 study, the ePortfolio was used as an authentic learning opportunity where students posted and shared all of their work, reflections, collaborations, and feedback. Student innovation plans, blog posts, literature reviews, and implementation plans were woven into the ePortfolio through a navigational structure of their choosing. Rubrics are open-ended to allow for creative thinking and implementation of student innovation plans and ideas.

Looking ahead to the next phase of our program and to prepare for this transition, it was necessary for our research team to explore the factors that contributed to continued use or discontinued use of the ePortfolio to ensure that the revised program supports a sustainable and scalable ePortfolio initiative that extends beyond the program of study. Therefore, we developed items for this study that were specifically integrated into our MEd program that were assumed to make the largest impact on learning and ePortfolio usage. Our research team sought to answer the research question: Which factors contributed to the persistent use of, or discontinued use of, ePortfolios beyond the program of study? To answer this question, the following section provides an overview of the methodology selected to acquire data and the collection and analysis used to conduct the study.

Methodology

Research Design

This study replicated the convergent parallel, mixed-methods design used in the initial study conducted in 2016. The purpose for replicating the study was to examine responses to the existing items to determine the perceived impact under different learning conditions. For example, the previous study used the ePortfolio as a repository for assignment posting, reflection, and as an assessment tool. In contrast, the current study uses the ePortfolio as a learning portfolio within the context of a significant learning environment that gives learners choice, ownership, and voice through authentic learning opportunities (Thibodeaux et al., 2017). Both quantitative and qualitative data were obtained to compare the data sets to the previous study to determine convergent and divergent responses. By collecting both sets of data, we were able to compare and contrast the optimal conditions in which learning thrives when using ePortfolios as part of the learning environment.

Participants

In 2018, all 71 existing graduates of the DLL Med program were invited to participate in the study. All graduates were employed in PK-12 educational institutions. Both males and females participated in the study at their discretion. We decided that convenience sampling would be the best method to collect data that would most closely represent all graduate students who participated in the program at any given time. A total of 50 graduates consented to participate, eliciting a 70% response rate for the online survey portion of the study. Seven graduates also agreed to partake in semi-structured interviews. As former students, the MEd graduates constructed an ePortfolio in their first course of the DLL program where they were encouraged to select a platform to initially share their work. In the second course of the DLL program, students focused on exploring alternative ePortfolio platforms and experimented with ways that they could use their ePortfolios throughout the duration of the program. Students were given the opportunity and were encouraged to organize, present, and structure their ideas to build their ePortfolios to support their unique learning needs both during and beyond their program of study. Students going through this process were encouraged to post regularly and to develop their voice through the process of revising and restructuring their platforms, authentic projects, and learning experiences shared on their ePortfolio.

In the 2016 study, 141 out of 533 (26%) graduates participated in the study. The context for building the ePortfolio from the 2016 program requirements was quite different than the current study, as we shared in previous sections. While students in the 2016 study were able to select their platform, the assignments followed a more prescriptive format with a rubric checklist of items to be shared. As a result, students viewed the ePortfolio as an assessment portfolio rather than a learning portfolio. For this reason, it was important for our research team to pinpoint the differences as to why students persisted in using their ePortfolios beyond their program of study.

Data Collection and Analysis

To collect descriptive data, an online survey was emailed three times over a 6-week period using a professional research platform tool provided by the university. Descriptive statistics were analyzed using SPSS to determine the average score for the items, which utilized the following ranking scale: 1 (*strongly disagree*), 2 (*disagree*), 3 (*neutral*), 4 (*agree*), 5 (*strongly agree*), and NA (*not applicable*). After the last question on the survey, one additional question asked participants if they would be willing to participate in follow-up interviews. For those who agreed, interviews were conducted in small groups (three to four graduates per interview) online using a video software tool. Interview transcriptions were analyzed for emerging themes using

Table 1
Response Percent and Count for Graduate Students Who Used ePortfolios

Answer option	2016 responses		2018 responses	
	%	*N*	*%*	*N*
Yes	17.7	025	70	35
No	82.3	116	30	15

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Table 2
Comparison of Graduate Students' Reported Averages for Discontinued Use of ePortfolio

Items	Averages	
	2016 study discontinued use *n* = 116	2018 study discontinued use *n* = 12
Choice of ePortfolio tool/platform	00(**3.28** (4)	2.50
Control over the ePortfolio tool	3.21	2.17
Choice over evidence of learning (artifacts)	2.99	2.55
Control over the ePortfolio development process	3.06	2.25
Opportunity to be creative with ePortfolio presentation and development	3.30	2.50
Real-world projects and authentic artifacts	3.14	2.75
Management of ePortfolio	00000)**3.47** (2) (3)	3.00
Proprietary software availability after the program	00)**3.24** (5)	2.33
Assessment of own learning	2.90	2.50
Deepened my interest in learning more	2.60	2.83
Access to good examples of ePortfolios	2.96	3.00
My instructor's ePortfolio example	2.74	2.50
Receiving feedback and comments	2.96	00)**3.33** (3)
Community or social connections in ePortfolio use	2.98	00)**3.33** (3)
Personal interest level in ePortfolio use	00000)**3.47** (2) (3)	00)**3.33** (3)
Discussion about lifelong use of the ePortfolio	2.95	2.67
School's or institution's attitude toward ePortfolio use	2.99	00)**3.33** (3)
Used as a career tool	2.77	3.17
Planning	3.17	00)**3.75** (2)
Time	00)**3.50** (1)	00)**3.83** (1)

Note. **Bolded** numbers are in the top five rating averages for the item. The number in parenthesis indicates the place of the item in the top five from highest rating average to lowest rating average within the top five items. Likert scale items ranged from 1 (*strongly disagree*) to 5 (*strongly agree*) with *not applicable* responses excluded.
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open coding as part of the grounded theory approach (Glaser & Strauss, 1967; Strauss & Corbin, 1990). Further, researchers used content analysis as the coding method to explore naturally occurring themes from the interviews. More in-depth content analysis was conducted by the primary researcher to ensure emerging themes were consistent with transcriptions for both content analyses. The research team used member checking, triangulation, and peer debriefing to ensure the quality and accurate interpretation of the interview data (Creswell & Guetterman, 2019).

Findings and Discussion

In the 2016 study, 141 graduates completed the exact same survey as the 50 graduates in the current study. Table 1 shows an increase from 17.7% (2016) to 70% (2018) of former students who indicated they are still using their ePortfolios beyond their program of study. For those who indicated they were not using their ePortfolios, the number decreased substantially to 30% of former students who have discontinued the use of their ePortfolios. Proportionally, the numbers

completely reversed. For this reason and others, the research team felt it was essential to follow up with respondents who indicated they would be willing to participate in interviews to gain a clearer perspective about why this occurred. (The interview findings are reported toward the end of this section.) Table 2 provides the survey rank of items related to the factors that contributed to graduates' discontinued use of ePortfolios beyond their program of study. We displayed a side-by-side comparison between the 2016 and 2018 studies to determine which factors were most influential in moving the needle towards more persistent use of the ePortfolio beyond the program of study. Similarly, Table 3 provides more in-depth Tables 2 and 3, the top five averages were bolded and rank-ordered, so it is clear which items had the most influential impact on graduate students' responses.

The subsequent sections describe in more detail the factors ranked in the top five for ePortfolio usage after graduation, highlighting the differences between the 2016 and the 2018 study rankings for graduate students' discontinued or continued use of the ePortfolio. We also offer our interpretation and explanation about how these results may have transpired.

Comparing the Factors That Related to Discontinued Use of the ePortfolio

In the 2018 study, the top-rated item related to discontinued use was time. With the demands on most educators, time to manage the ePortfolio can certainly be an obstacle, especially if students are not authentically using the ePortfolio and sharing their ideas with a specific audience. For this reason, the DLL program allocated one entire course to building out all components of the ePortfolio including a blog, categories, tags, static and dynamic pages, archives, widgets, etc. Both studies shared the common denominator that time was a factor that influenced persistent use of the ePortfolio beyond the program of study. Even with one entire course devoted to ePortfolio development, the time barrier had significant impacts on the perceptions of graduate students and their experience using the ePortfolio as part of their program of study.

In the 2016 study, the top-rated item for discontinued use of the ePortfolio was also time. In the first study, ePortfolios were used to house assignments, but we are unfamiliar with the collaboration component between students and the time it took to set up their websites. If students only used the ePortfolios as a repository, the time it took to learn how to build a navigational structure and other technical features may have had an impact on the recognized benefits (Scholz, Tse, & Lithgow, 2017).

In the 2018 study, planning which components/ideas to include on the ePortfolio was rated in the top two factors for discontinued use. A learning ePortfolio is intended for

collaboration, reflection, and feedback but also for sharing with others such as administrators, parents, students, and the community. Through our experience, we have learned that sharing with others requires decision-making and ownership of ideas that students may not be comfortable with yet, especially if they do not have an authentic audience identified. For this reason, planning which components/ideas to include could be a daunting task if students do not have a clearly identified audience.

The second and third highest rated items (ranked the same) for discontinued use from the 2016 study were the management of the ePortfolio and personal interest level in ePortfolio use. This finding was not a surprise because if the ePortfolio was perceived as a repository for artifacts or seen only as an assessment portfolio, our research suggests that personal interest level tends to be lower because this is one more thing that gets bolted on to the learning environment (Papert, 1993; Thibodeaux et al., 2019a). As a result, management of the ePortfolio becomes another onerous task. In one study, Scholz et al. (2017) examined factors related to alignment or misalignment of learning outcomes and ePortfolio usage in higher education. While the context of the aforementioned study is situated across several courses and disciplines, the researchers argued that alignment is "a predictor of success in ePortfolio design" (p. 149). On the contrary, misalignment could occur based on lack of support, technology used to support the learning process, and ambiguous assignment instructions and learning outcomes—all factors that could contribute to lowered levels of personal interest.

The third highest ranked items in the 2018 study spanned across four different items, that made up only six participants who discontinued use of their ePortfolio. The four items included receiving comments and feedback, community and social connections in ePortfolio use, personal interest level in ePortfolio use, and school or institution's attitude toward ePortfolio use. Deeper examination of the data revealed that three of these items ranked very highly in comparison to graduate students' averages for continued use of ePortfolios—over 4.1 (see Table 3) with the exception of community or social connections in ePortfolio use. It is possible that some participants misinterpreted some of the scale items. One explanation is the three highest ranked items do not necessarily mean that these items contributed solely to discontinued use; but perhaps, these items were not factors that ranked very highly in terms of continued use. While this is just one explanation, we had a few additional ideas included in the following paragraph that could explain these rankings.

The fourth item that contributed to discontinued use in the 2016 study was the choice of ePortfolio tool and/or platform. While students were allowed to choose their own platform, some selected a particular platform

Table 3
Comparison of Graduate Students' Reported Averages for Continued Use of ePortfolio

	Averages	
Items	2016 study continued use *n* = 25	2018 study continued use *n* = 35
Choice of ePortfolio tool/platform	3.48	4.35
Control over the ePortfolio tool	3.56	00(**4.69** (2)
Choice over evidence of learning (artifacts)	3.72	00(**4.53** (5)
Control over the ePortfolio development process	3.68	00(**4.66** (3)
Opportunity to be creative with ePortfolio presentation and development	3.52	00(**4.53** (5)
"Real" world projects and authentic artifacts	00(**3.84** (2)	00(**4.72** (1)
Management of ePortfolio	00(**3.76** (4)	00(**4.53** (5)
Proprietary software availability after the program	3.64	4.25
Assessment of own learning	00(**3.79** (3)	4.38
Deepened my interest in learning more	3.72	4.41
Access to good examples of ePortfolios	3.72	4.16
My instructor's ePortfolio example	3.65	4.09
Receiving feedback and comments	00(**3.75** (5)	4.19
Community or social connections in ePortfolio use	3.54	3.88
Personal interest level in ePortfolio use	3.68	4.48
Discussion about lifelong use of the ePortfolio	3.60	4.19
School's or institution's attitude toward ePortfolio use	3.60	4.16
Used as a career tool	00(**3.88** (1)	00(**4.56** (4)
Planning	3.70	4.03
Time	3.65	3.84

Note. **Bolded** numbers are in the top five rating averages for the item. The number in parenthesis indicates the place of the item in the top five from highest rating average to lowest rating average within the top five items. Likert scale items ranged from 1 (*strongly disagree*) to 5 (*strongly agree*) with *not applicable* responses excluded.
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such as Google Sites because their schools were committed to using that particular tool. Unfortunately, some of those tools and platforms were found to be limited and not designed as robust website platforms, thus impacting control and functionality. Research shows that compulsory application of tools prescribed by a program also does little for ownership and transparency of information (Buchem et al., 2014). If the ePortfolio is used primarily as a learning tool where aspects of choice, ownership, voice, collaboration, and feedback become vital components of the learning process, real-world application of projects and authentic learning experiences shared on the ePortfolio are considered worthwhile. In the 2016 study, the fifth highest item was proprietary software availability after the program. Some students were unclear about the difference between their current ePortfolio and the portfolio accreditation assessment tool, which could have caused additional confusion. Based on graduate student perceptions from the 2016 interviews, there was also some concern about whether districts would support the use of their selected ePortfolio platform or whether their pre-selected ePortfolio platform could even be used in their districts.

Some of the limitations of particular platforms do not allow for easy commenting and feedback and if that component was missing, students did not benefit from peer collaboration in the way that other students did that had the commenting feature available. The lack of collaboration could have adversely impacted the responses to the community and social connections and personal interest level in ePortfolio components on the survey. Since many students at the time the studies were conducted indicated that their schools were not using ePortfolios, or their districts did not support them, it was difficult for them to step back and see the bigger picture context and benefits of the ePortfolio. Also, if students did not take ownership of their ePortfolio during their time in the program, this could perpetuate a lower personal interest level in the ePortfolio.

Comparing the Factors that Related to Continued Use of the ePortfolio

In the 2018 study, the highest rated item was real-world projects and authentic artifacts—all components added to the ePortfolio during the learning experience. Within a significant learning environment, participants built an innovation plan where all of their coursework related to that innovation plan and was posted to their ePortfolio. As an example, if their innovation plan was a blended learning initiative, taking the innovation proposal to a full innovation plan would require authentic application of ideas, planning, revising, iterating, and building out media pitches. Learners who experienced a significant learning environment understood that experimentation, exploration, and creativity provided infinite opportunities for learning (Thomas & Brown, 2011) but that all of this would be shared on their ePortfolio on the world wide web for their peers and others to see. Students who took ownership of their ePortfolios saw the value of using their work to help them secure future career goals. On the contrary, assigning numerical values to ePortfolios can defer ePortfolio usage to knowledge and skill requirements that downplay the notion of transformative learning (Mueller & Bair, 2018)—this finding is significant because authentic and real projects become the focus of the ePortfolio and using the ePortfolio as a career tool becomes a by-product of taking ownership through application of their own ideas. This shift is noteworthy because the ePortfolio used as a career tool dropped to the fourth place in the 2018 study instead of first place in the 2016 study. In the 2016 study, the top-rated item for participants who continued to use the ePortfolio was using their website as a career tool. Graduate students saw the benefit of having an ePortfolio tool to showcase their learning and share their best assignments during their course of study.

Control of the ePortfolio and development process was ranked second and third highest for continued use in the 2018 study. Using the COVA learning approach, we came to realize that the more prescriptive the assignment or task, the less creative students would be. We also confirmed that control gave learners a degree of agency that fueled internal motivation. Learners who have a sense of autonomy, mastery, and purpose align their values and belief systems with their inner most desires and goals (Pink, 2009). Harvard researcher and professor Rose (2016) stated, "People are happiest when they have control over everything that's important to them" (p. 163), and we found that this statement had evidence to support its claim in both research studies. In the 2016 study, the second highest rated item was real-world projects and authentic artifacts. It is no surprise that with the shift to a learner-centered learning environment, this item was ranked almost an average point higher in the 2018 study. In our study, we discovered that the more ownership and control the learners had, the more likely they were to persist in using their ePortfolios after their degree program concluded.

In the 2018 study, the fourth highest ranked item was use of the ePortfolio as a career tool. This is not surprising because the assignments students added to the ePortfolios were part of their own forward thinking and bigger picture plans to impact their learning environments and schools. We noted that this average was much higher than the previous rating in the 2016 study most likely because the ePortfolio was used as a career tool as a result of students taking ownership of the ePortfolio. The third and fourth highest rated item in the 2016 study was assessment of one's own learning and management of the ePortfolio. Graduates who participated in the 2016 study may have experienced the ramifications of only collecting items to add to the ePortfolio for institutional requirements or accrediting bodies, which in turn may have caused assignments to be viewed as overly prescriptive and negatively impacting reflection and story-telling on the ePortfolio (Munday, 2017).

In the 2018 study, the fifth highest ranked items that contributed to continued use included choice over evidence of learning, opportunity to be creative with ePortfolio presentation and development, and management of the ePortfolio. Using the COVA learning approach, students could choose how they wished to organize, structure, and present their learning, and used their voices to articulate their ideas through media projects and pitches representing their work. We assumed that managing the ePortfolio became less tedious because the students owned the learning and everything that was included on the ePortfolio was their own work and ideas, thus contributing to their values, goals, and beliefs. In the 2016 study, the fifth highest ranked item was receiving feedback and comments on the ePortfolio; this finding points to the importance of social collaboration in learning (Dewey, 1916). Feedback is integral to learning and is one of the most impactful tools that boosts student achievement (Hattie, 2009).

Interviews

In the 2016 study, Thibodeaux et al. (2017) discussed and shared the interview results and findings. In the 2018 study, the we used semi-structured interviews to corroborate, clarify, and provide additional insight into the survey results. Seven graduates participated in interviews that lasted approximately 45-60 minutes. Of the seven graduates, five indicated that they are still currently using their ePortfolios. Table 4 shows the themes that emerged from the questions.

Table 4
Emerging Themes from Interviews

Interview Questions	Emerging Themes
What are the top three factors that contributed to discontinued use of the ePortfolio?	Time
	Maintenance
	Keeping up with upgrades and updates
	On-the-job demands and constraints
What are the top three factors that contributed to your continued use of the ePortfolio?	Curating "my" own website/own domain
	Collaboration
	Showcasing my work
	Sharing/Reflection of who I am
What could be done to heighten or improve your interest in ePortfolio?	Reviewing other examples of ePortfolios
	Visible learning
	Keeping organized
What are the most important things that can be done to help you recognize the value of ePortfolios?	Ownership and voice in learning
	Helped visualize the future
	Job marketing tool/relevancy
What are the most important things that can be done to help you appreciate the value of authentic assessment?	Interest came from value
	Authentic work was used
	Retrievable resources/digital locker

Based on the interviews and information from former students who discontinued their use of ePortfolios, we deduced that priorities shifted and there appeared to be a natural progression from an ePortfolio to an Instagram or YouTube channel that enabled learners to share ideas publicly without maintaining their own site. However, drawbacks were noted as a result of this transition such as the inability to control every aspect of their accounts/platforms as they were able to do with their ePortfolio. Further, another participant said she struggled using her ePortfolio because her campus technology IT blocked outside use of websites and "locked everything down to keep everyone safe." The same graduate indicated there was no "airtime" for professional learning and no space for change in her district. Another participant concurred and shared that "state testing adds quite a bit of tension and resistance to developing alternative assessment models." One participant indicated that his ePortfolio, which was hosted on a friend's server, was hacked and he did not have the time nor inclination to rebuild it. This raises the issue of ensuring that the hosting platforms students select are secure and have backups and other security measures in place, though this is the responsibility of the student. If students are not carefully selecting their platforms, they could potentially run the risk of losing all of the work they have done.

For graduates who continued to use their ePortfolios, one participant mentioned there was significant value because his ePortfolio was a "reflection of who I am" and that the "ePortfolio became [his] brand" and he shares it often because "if it helps one person, it is worth it." Another participant

mentioned that he was offered his new job as an instructional coach because he shared his ePortfolio and all of the authentic work he included. This was similar to a comment from another interviewee whose ePortfolio was a factor in her being appointed to a new leadership position. Another participant mentioned that he needed his ePortfolio to be his and not associated entirely with his job; the same interviewee saw his ePortfolio as a locker for his digital resources.

The comments and themes from the interviews complement the survey findings in a multitude of ways. Though we were hopeful everyone continued to use their ePortfolios after they graduated from the DLL program, it was important to explore the challenges and barriers that currently exist in maintaining an ePortfolio. Despite the informative data from this study, there are limitations and several additional avenues to investigate in future studies.

Brief Summary and Practical Implications

For schools of education or institutions considering ePortfolios for learning, assessment, or writing, the following recommendations are by no means an exhaustive list of practical implications. While these suggestions are open enough to allow for any program using an ePortfolio, consider making the ePortfolio a "one stop shop" for all learning (assessment and writing included) as part of any discipline. The crosscutting themes between the 2016 and 2018 study as factors related to discontinued use of the ePortfolio were the personal interest level in the ePortfolio itself and the time needed to build the website. Not surprisingly, this

finding was corroborated by the interview data. Our suggestion would be to focus on setting up authentic learning environments (i.e., CSLE) that allow students real world application of their ideas through COVA, and to share that experience on their ePortfolios to increase their interest level and consider the process time well spent. In doing so, learners generally use their ePortfolios as a career tool that is inclusive of their future career goals; over time, they learn to manage their website as well. A simple shift in focus could make the ePortfolio the most powerful learning opportunity in any program.

Limitations and Implications for Future Research

One limitation lies in the population for this study. First, all participants included in the study were from one institution for both the 2016 and 2018 data sets. In the 2016 study, the participant population was larger and pulled from the Educational Technology Leadership program that eventually became part of the DLL program. In the 2018 study, the participant size was smaller and students were immersed in a significant learning environment that used the COVA learning approach—this was a significant programmatic change. Programmatic changes, though intentional, could account for the variance in responses to survey items and interview questions. While such responses were expected, to what degree these changes impacted our learners is worthy of further research. Further, self-selection of participants (i.e., convenience sampling) to collect data for both the survey and the interviews is subject to instructor, personal, and programmatic forms of bias, though the data did not indicate such. It was also necessary for us to replicate the previous study under different conditions so we could more closely pinpoint the factors that were influenced by the shift from a more teacher-centric to a more student-centric learning environment.

Another limitation includes the length of time between studies. Just under three years was the difference between the initial study and the replicated study. It is possible that additional time between studies could establish consistent or incongruous responses across items that would be revealed using crosstabulation methods for items and variable comparisons. Variability between instructors, methods, courses, and participant demographics indefinitely weighed into the findings of this study.

Further limitations lie in the survey developed for the study. Interpretation and degree of alignment between one's own perception of what the item deals with may have been slightly different than what we originally intended even after member checking and triangulation methods were used (Creswell & Guetterman, 2019). Overall, we noted that many items

in the 2018 study were similarly ranked in numbers indicating that graduate students had varying perceptions about the reasons they discontinued use of their ePortfolio. What led to those discrepancies? More detailed or clarified survey items or sub-survey items should be included in future study replications.

Future research could replicate the study several years from the current study to see if the results vary. Replicating this study a third time would constitute a longitudinal approach providing more information that could possibly add to, or take away from, consistency in findings. For example, additional research could address the notion that learners given choice and voice in their learning naturally push templates, prescriptive rubrics, and standardization to the backseat. If learners are given these opportunities, what are the effects on the learner and the learning environment?

Lastly, programmatic and instructor roles change over time impacting the integrated use of the ePortfolio within a significant learning environment. According to Creswell and Guetterman (2019), instructor familiarity with the program of study, students, and college is another limitation to be considered because assumptions could have been made based on our internal knowledge. Further, compartmentalizing ePortfolios into categories such as writing portfolios or assessment portfolios are a common thread at institutions, which ultimately limits the potential that ePortfolios can have on learning and learning environments.

Conclusion

If students perceive technology and the ePortfolio as a rigid tool that is structured and "bolted" onto the learning environment used to assess "checkbox" tasks or to meet the needs of a numerical rubric, little will be gained academically (Mueller & Bair, 2018; Munday, 2017; Papert, 1993). Building on this notion, if instructors view ePortfolios as assessment tools, it is easy to defer to rubrics that measure knowledge and skills and less on transformative learning experiences that align with learning outcomes. Alternatively, there is a positive correlation between instructors who align learning outcomes with student learning experiences shared through an ePortfolio (Scholz et al., 2017). Unfortunately, it is less tedious for instructors to measure knowledge and skills than it is to measure successful outcomes of an authentic learning experience that includes real-world application of ideas. Yet, according to this study, real-world projects that result in authentic artifacts are what many students desire most in their academic learning experiences. It could be that instructors talk themselves out of ePortfolios and genuine learning opportunities because it is unclear how to assess these active learning environments.

Our research, similar to Eynon et al. (2014), suggests we need to find ways to bolster integrative and authentic learning experiences and implementation of ePortfolios as a key to student understanding of the value of ePortfolios. Egan, Cooper-Ioelu, Spence, and Peterson's (2018) study on ePortfolio implementation concluded that the method in which ePortfolios are implemented and embedded within the context of the curriculum and learning environment impacts how and whether students use ePortfolios for learning. Learners must be given opportunities to determine what is important to them and why; essentially, they must be given a voice in the learning process to determine their pathway forward (Landis et al., 2015; Thibodeaux et al., 2019a) and ePortfolios can play an instrumental role in that process if learners are given choice, ownership, and voice through authentic learning experiences.

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