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Factors that Contribute to ePortfolio Persistence

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This study examined factors that contributed to persistent use, or discontinued use, of ePortfolios beyond the program of study, as perceived by former educational technology students in a graduate program. The related literature points to contemporary research that choice, ownership, voice, and authentic learning are growing trends emerging as persistent factors that contribute to ePortfolio learning. To research whether these elements were critical to students' continued use of ePortfolios, a survey instrument was used that contained indicators related to choice, ownership, voice, and authentic learning. 141 former graduate students completed the survey and several students participated in semi-structured interview groups. Of the former graduate students, 17.7% of the students have continued to use their ePortfolio. Of those that are using the ePortfolio, the results of this study indicated that authentic projects, assessment of one's own earning, receiving feedback, and management of the ePortfolio during the learning process had significant influence on the continued or discontinued use of the ePortfolio after students graduated from the educational technology program. Open-ended interviews revealed that student participants preferred to create ePortfolios that allowed them some control, ownership, and agency over the learning process in various developmental aspects of ePortfolio learning.

ePortfolios as a learning tool are gaining recognition and momentum in higher education (Bryant & Chittum, 2013; Clark & Eynon, 2009; Deneen, 2014; Lorenzo & Ittelson, 2005; Miller & Morgaine, 2009; Shroff, Trent, & Ng, 2013) and need to be recognized for their transformational power in the learning process (Batson, 2013). As such, ePortfolios have the potential to transform pedagogy in higher education because they "respond to the growing movement" (Clark & Eynon, 2009, p. 18) towards active and student-centered learning and away from the traditional didactic approach. Research indicates that ePortfolios make learning visible and encourage learners to engage in deeper, integrated learning (Eynon, Gambino, & Török, 2014). To engage in deeper learning experiences, learners must first develop a sense of control and ownership over the learning process. This is one of the greatest current challenges that education faces today (Lindgren & McDaniel, 2012). Although there have been a multitude of studies about ePortfolio learning and its usage in higher education, much of the literature has examined assessment practices and knowledge sharing. This study focused on the factors of ePortfolio persistence beyond the program of study and how this information could inform and enrich research in the field of ePortfolio learning. In addition, a learning approach is unveiled that could build a pathway for a pedagogical shift in higher education.

Related Literature

ePortfolio Learning

Lorenzo and Ittelson (2005) defined ePortfolios as digital collections of student-generated authentic content that include resources and multimedia elements contained in a personal space. ePortfolio learning encompasses the offering and exchange of ideas between learners and their audiences that helps learners to develop critical thinking skills and personal presence. In their research, Janosik and Frank (2013) recognized that ePortfolio used as a learning tool pushed learners to continually grow in their accomplishments. When implemented carefully, ePortfolio learning can make great contributions to student learning experiences (Bryant & Chittum, 2013).

ePortfolio learning has roots in andragogy and heutagogy. The term andragogy, popularized by Knowles (1985) and building on the work of educators Alexander Kapp and Eugen Rosenstock-Huessy, introduced the idea that learners who internalized the learning process focused on how they learned, took control of the learning process on their own terms, and self-regulated their learning. Heutagogy, coined by Hase and Kenyon (2013) is defined as self-determined learning that builds upon constructivism and andragogy. Heutagogy fundamentals also include learning how one learns best, using strategies such as active and reflective learning. The learning approach proposed in this study contains aspects of andragogy and heutagogy that connect to attributes of constructivism and social constructivism, all of which contribute to the ePortfolio learning experience.

Attributes of Social Constructivism

Jonassen (1994) defined constructivism as an active process in which learners construct knowledge based on their experiences. Vygotsky's (1978) social learning theory described further how social interaction and collaboration influence the construction of knowledge. These two theories share characteristics of

social constructivism, where learning is enhanced by layers of social interaction combined with culture and context. Additionally, social environments and social contexts further enhance the learning process by allowing learners to become involved in a community of practice. Research by Carson, McClam, Frank, and Hannum (2014) supported social constructivist learner characteristics, recognizing that ePortfolios serve as tools to "elicit associations with social pedagogies" (p. 75) wherein these associations are meant to promote social learning and connectivity within a community of learners. Eynon et al. (2014) confirmed that social pedagogies are key to learner engagement. Similarly, Jonassen (1995) identified several attributes of meaningful learning. These attributes include learning that is active, constructive, collaborative, intentional, conversational, contextualized, and reflective. Learning is impacted by these attributes and further supported by technology that consists of designs that engage learners and learning environments that promote learner-initiated construction of knowledge when learners have opportunities to be socially connected with others. Jonassen (1990) stated that multiple perspectives and learner attributes contribute to meaningful learning opportunities. All of this takes place in the mind of the learner (Jonassen, 1990), and growth of mind cannot be achieved within one's own skin alone (Bruner, 1991). Bass (2014) acknowledged that ePortfolios and social pedagogies assist learners in developing a sense of agency that is critical to building experience in their chosen field. As ePortfolio learning combines with social learning and constructivist pedagogies, this relationship could have a profound impact on ePortfolio practices used for teaching and learning.

A Learner-Centered Approach

A critical understanding of ePortfolios using social constructivist principles requires a learning approach that complements the very origins of ePortfolio learning. The learning approach in the Digital Learning and Leading (DLL) program was designed with learner-centered principles that enable a shift of control and ownership of the learning process to the learner and away from the instructor. Researchers recognize this approach as a component of a self-regulated personal learning environment where learners exercise control over the selection of tools and resources that will be gathered and disseminated through choice of content and learning tools (Buchem, 2012; Buchem, Tur, & Hölterhof, 2014; Sheperd & Skrabut, 2011). Drawing upon Dewey's (1910) theory that reflection within the learning community deepens and complements learning, Nguyen and Ikeda (2015) acknowledge that ePortfolios can enhance the self-regulated learning process. As such, ePortfolios were acknowledged as the

eleventh high-impact practice in the field of education (Center for Engaged Learning, 2016). To create such an experience for learners, Eynon et al. (2014) proposed that "the most powerful ePortfolio practice is inherently connective and integrative" (p. 8) when combined with other high-impact learning practices. Since ePortfolio practice is inherently eclectic, it deserves an equally eclectic learning foundation. In the DLL program, we developed the COVA (choice, ownership, voice, and authenticity) learning approach to give our learners the freedom to choose (C) how they wish to organize, structure and present their experiences and evidences of learning. We give them ownership (O) over the selection of their authentic projects and the entire ePortfolio process—including selection of their portfolio tools. We use the ePortfolio experiences to give our learners the opportunity to use their own voice (V) to revise and restructure their work and ideas. Finally, we use authentic (A) or real world learning experiences that enable students to make a difference in their own learning environments (Harapnuik, 2016).

Subsequent paragraphs address the related literature that pertain to ePortfolio learning and the elements necessary for a learner-centered approach. We will refer to learner-centered ideas as the COVA learning approach.

Learner Choice in the Learning Environment

The first identified component of the COVA learning approach is learner choice in the learning environment. Learner choice in the development of ePortfolios is essential to the learner experience. Choice allows the personalized learning that learners require (Bolliger & Sheperd, 2010). Learning is personal when learners can adapt or develop learning goals and choose learning tools that supports the learning process (Buchem et al., 2014). When learners choose to participate in learning activities, the engagement factor in ePortfolio increases (Shroff et al., 2013), thus facilitating lifelong learning through an open-ended personal learning environment that the learner establishes (Sheperd & Skrabut, 2011).

Deneen (2014) examined key variables that impacted ePortfolio usage in higher education, using ePortfolio platforms as assessments for learning in higher education. Two eportfolio platforms, Mahara and Wordpress, were compared across 450 students and nine instructors. Findings indicated that learners who used Mahara found a steeper learning curve than expected, resulting in negative impressions of the chosen platform. In another course, findings from learners that selected Wordpress resulted in continuous engagement and positive perceptions of the experience. The results of this study substantiate why choice of the learning tools is necessary to promote a positive ePortfolio learning environment.

Clark and Eynon (2009) raise the point that too many standardized ePortfolio platforms take the ownership and responsibility from the learner. In doing so, student choice is limited, and the pedagogical goals of the learning process are pre-determined and limited; therefore, learner reflection and engagement are negatively impacted (Bryant & Chittum, 2013). To point to one example of this problem, students in an undergraduate program at Clemson University expressed the desire for more flexibility in their ePortfolio platform choice and design. As an outcome of the ePortfolio initative, faculty members would be reviewing student evidence of learning, so students wanted choice in how they shared their story (Ring & Ramirez, 2012).

Learner Ownership and Agency

Ownership and agency comprise the second essential part of the proposed learning approach. Shroff et al. (2013) examined factors that influenced student and teachers' attitudes toward value, control, and responsibility of their own learning using ePortfolios. Findings of 77 participants' attitudes toward learning revealed that personal responsibility increased their role as stakeholders in their own education. This is the point at which ePortfolio learning was recognized as promoting ownership of the learning process.

At LaGuardia Community College, students control all aspects of the ePortfolio process from visual appearance to critical thinking and collaboration. In comparison to learners without an ePortfolio, LaGuardia Community College found that students using ePortfolios showed higher degrees of engagement than those without an ePortfolio (Clark & Eynon, 2009). Miller and Morgaine (2009) found that learners do not automatically assume the role of responsibility for their own learning; their belief systems indicate that the teacher is responsible. Student ownership of learning cannot be assumed; learners must be "courted as investors" in their own learning so they learn to take control over the learning process itself (Shroff, Deneen, & Lim, 2014, p. 87).

ePortfolio fosters critical thinking and self-regulation of learning. Self-regulated learning using ePortfolios contributes to an increase in motivation and learning strategies. As a result, learners accept more responsibility and ownership of their learning (Nguyen & Ikeda, 2015). Buchem et al. (2014) studied personal learning environments in which learners use technology for learning to build autonomy and self-regulated learning strategies. In this study, the assumption was that the learning environment becomes personalized when learners perceive that all aspects of the learning and environment were controlled by the learner. A comparison of the impact of tangible and intangible elements of the learning environment were considered.

Nontangible elements included control of the content and information. Tangible elements included tools to develop the learning environment itself. The results of this study indicated that the ability to control the environment was more strongly related to ownership of the learning experience. The perception of the learner is tied directly to feelings of ownership, although learners may not completely control all elements of the learning environment. Ownership of learning was tied directly to agency when learners make choices and "impose those choices on the world" (Buchem et al., 2014, p. 20; Buchem, Attwell, & Torres, 2011).

Ownership and agency are critical components for learning (Buchem et al., 2014). Lindgren and McDaniel (2012) compared the student engagement and learning of 96 students enrolled in a course that contained elements of student narrative and agency with 129 students in a traditional course. The group of 96 students were given the option to choose course content that related directly to their own personal learning interests. Learner engagement surveys and perceptions indicated that learner agency impacted the learning process and learner engagement and also added to the expected learning outcomes. Ninety-one percent of the learners indicated an extremely positive or mostly positive learning experience. The findings of this study indicated that student agency aided student learning and promoted student engagement.

Reflective Voice in the Learning Process

Reflective voice in the learning process is the third component of the COVA learning approach. As part of the Connect to Learning framework at LaGuardia Community College (CUNY), ePortfolios that help learners connect with others through inquiry and integration are part of a much larger learning framework that involves learner engagement (Eynon et al., 2014). Bass (2014) identified that in the Connect to Learning Catalyst Model, social pedagogies are the main ingredient in making learning visible. At the core of making learning visible, Bass acknowledged three key practices learners must be involved with: constructing understanding, communicating understanding, and authentic audiences. Bass (2014) posited that learners need to engage in the learning process and share their knowledge publicly with people other than the course instructor and by doing this, learners can achieve broader student learning outcomes such as deepened understanding, learned flexibility of knowledge, "voice and a sense of purpose," (p. 3), accepting and sharing feedback, and a sense of personal significance. These learner-centered ideas are part of the key principles in which the COVA approach relies most heavily.

Landis, Scott, and Kahn (2015) examined specifically the role of reflection in ePortfolio learning and identified strategies instructors could use to foster

learner reflection in ePortfolio learning across all levels and fields. Such practices include explanation and advocacy, demonstration, assignments, social pedagogies, and formative assessment. The role of reflection was valued, but it was not the single most important aspect of using an ePortfolio. The study findings indicated that learners in advanced levels preferred a less prescriptive agenda and when given such freedom, they also desired long-term significant control of their learning process (Landis et al., 2015). Additionally, instructors found that reflection helped learners build metacognition and draw connections between the content and the learning outcomes. The COVA learning approach shares some of the same attributes as these principles.

Waycott, Sheard, Thompson, and Clerehan (2013) examined the perceived advantages and disadvantages of posting and sharing student work on the internet. The perceptions of 20 Australian instructors indicated that opportunities were abundant when making learning visible in areas such as collaboration, communication, and community building for students. Another key finding indicated that communities of students who built a collaborative atmosphere were inhibited by university standards and regulations for assessment of student work (Waycott et al., 2013).

Research shows that learning in high agency learning environments becomes highly visible because learners can examine and reflect on their own learning as they curate their body of work over time (Eynon et al., 2014). For example, the resident trainees at the University of Michigan Medical School use ePortfolios as a tool to record their thoughts, reflect upon situations, and analyze daily occurrences throughout their training. Spelman College used ePortfolios in the seminar courses for authentic assessment, not tied to any specific course, allowing for learners to continuously evaluate their own assignments demonstrating growth over time (Rhodes, 2011). In another graduate program, students recognized that reflective dispositions took a great amount of time and effort but also allowed them to see holistically the bigger picture. As a result, learners were better able to articulate their learning experiences and understand how they had learned (Janosik & Frank, 2013). Similarly, in an undergraduate program, ePortfolios support learner reflection as learners work to curate and tailor information added to their ePortfolios, synthesizing their own work to tell their own stories (Ring & Ramirez, 2012).

According to the Association of American Colleges and Universities (2009), ePortfolios provide a portable and transparent medium for learners to demonstrate what they have learned, allowing learners opportunities to reflect on the progress of their work (Miller & Morgaine, 2009). Furthermore, learners reported the need for ePortfolio portability to continue their work beyond the program of study (Ring & Ramirez, 2012).

Authentic and Deep Learning Experiences

The final component weaved into the learner-centered approach is authentic and deep learning opportunities. In the future, learners will need multi-modal approaches and opportunities to communicate effectively with their organizations and for group or social networking projects (Rhodes, 2011). For this reason, learners should be allowed to showcase their ePortfolios to authentic, external audiences, including peers and learning networks for feedback and collaborative work (Bass, 2014). Concomitantly, learners make their work accessible to others, providing transparency to resources that can be reviewed by other learners as a tool to improve their own work. Literature supports the pedagogical purpose of social technologies for use in a learning environment that allows for learners to partake in genuine communication and peer-to-peer collaboration. The very nature of ePortfolio learning enables learners to create personalized ePortfolios that are authentic, giving them opportunity to create and publish their own work, which highly individualizes the ePortfolio learning experience (Jones, Downs, & Jenkins, 2015).

O'Keeffe and Donnelly (2013) conducted a study that depicted the effect that ePortfolio learning had on augmenting student learning opportunities. The pedagogical impact of ePortfolio learning results in deeper learning when learners reflect and evaluate the claims made by others, build their own learning experiences, and apply their newly acquired knowledge to authentic settings (O'Keeffe & Donnelly, 2013; Penny Light, Chen, & Ittleson, 2012; Ring & Ramirez, 2012). Learners also reported the need for support to continue the freedom of authentic learning with peer support groups (O'Keeffe & Donnelly, 2013). Janosik and Frank (2013) conducted a study in which participants responded to several interview questions about their experiences and challenges with ePortfolio learning through focus groups and interviews. Themes such as aptitude for change, time for reflection and decision-making, affirmation, and the development of metacognitive skills made ePortfolio learning in higher education a valuable experience (Janosik & Frank, 2013).

Bolliger and Sheperd (2010) examined student perceptions of ePortfolio integration in online courses. Student perceptions of communication, connectedness, value, and perceived learning were examined. Key findings further support that most participants found ePortfolio learning to be a positive impact on their learning, also increasing their desire to learn (Bolliger & Sheperd, 2010). Through communication within the ePortfolio learning environment, learners are more likely to identify

gaps in their own understanding, clarify information and challenge assumptions posed by others.

ePortfolio and our Research Focus

Our research led us to first find out why learners continued or discontinued use of the ePortfolio beyond their program of study. It was necessary to identify students' perceptions of the ePortfolio experience in their previous master's program so we could gauge their experience with elements of learner choice, ownership and agency, voice, and authentic learning experiences. The COVA learning approach provides a functional foundation for the DLL Program at Lamar University. In this program, learners develop authentic innovation plans that impact their own organizational learning environments. These authentic projects along with the ePortfolio and the COVA approach are consistent foundational elements that unite all courses within the program. With ties to pedagogy, andragogy, and heutagogy, this learning approach enables deep and meaningful learning through authentic learning opportunities. Learners take ownership of the learning processs, and their choices are reflected in their voice as they share and promote their authentic work within their own program and workplace and to colleagues and learning communities. Their ePortfolios not only provide a location to host their media, authentic plans, and reflections, but they also become the digital staging points for the learning innovations that they are developing in their learning environments. The COVA approach has enabled us to give responsibility and accountability back to the learner and combine and utilize fundamental constructivist principles that are supported by the research.

Research Purpose and Question

According to Penny Light et al. (2012), one recognized aspect of ePortfolios in education is the ability for students to document the development of skills, ideas, and abilities enabling learner-centered control of the learning process. If ePortfolios are a such a good tool, why are students discontinuing their use beyond the academic environment (Batson, 2016)? The purpose of this mixed methods study was to examine the persistent use of ePortfolios or discontinued use of ePortfolio beyond the program of study. The significance of this study derived from the assumption that too many students may not continue to use ePortfolios after they graduate from their program. This idea led us to determine the reasons behind those decisions. The current master's degree program uses ePortfolios as the platform in which evidence of learning is presented and shared with the learners' community. The researchers determined that investigating the factors that contributed

to persistent ePortfolio use would add to ePortfolio scholarship in the field. The research question that guided this study is: Which factors contributed to the persistent use of, or discontinued use, of ePortfolios beyond the program of study?

Method

The study used a convergent parallel, mixed-methods design in which quantitative data was obtained through Likert scale items and qualitative data was gathered through open-ended questions. The mixed methods research design allows for collection of both quantitative and qualitative data that is analyzed and compared to determine if each data set supports or contradicts the other and to explain any discrepancies (Creswell, 2015). The survey instrument contained two Likert-scale questions. Semi-structured focus group interviews contained three open-ended questions eliciting open-ended and candid responses. Both quantitative and qualitative data were collected and the data were analyzed to better provide an assessment of graduates' persistent use of factors that contributed to ePortfolio use after completion of their master's degree program while considering factors that contributed to discontinued use of ePortfolios.

Participants

The population for this convergent mixed methods research study was comprised of 533 graduates of an online educational technology leadership (ETL) master's degree program. The ETL program was, and is currently, an 18-month program. All of the graduates were employed in PK-12 school settings throughout the duration of the program. Students were invited to participate in the study approximately 3-5 years after graduation. A mixture of male and female participants of all ages were invited to participate if they were educational technology graduates and developed an ePortfolio as part of their course of study. Of the 141 respondents, 18.5% or 26 were male and 81.5% or 115 were female. The timeline for conducting the survey and the focus group interviews spanned over a 2-month period.

The graduates created their ePortfolio in the first of 12 courses and utilized it throughout all of the courses in the master's degree program. Students used ePortfolios as a learning tool to post their evidence of learning from various courses. Examples could take the form of posting a powerpoint for peer review, a blog posting for discussion, or an authentic assignment. Students in the ETL program were given a choice as to which free ePortfolio platform they could use. Students selected open source platforms such as Google Sites, Wordpress, Weebly, and any others that were available. Students were able to select a blogging platform if the

platform allowed them to contribute, just as an ePortfolio would. A specific platform tied to a learning management system was not available in this program. ETL students were required to post evidence of learning from the courses that demonstrated how eportfolio learning contributed to: (a) more rigorous reflective practice for the master's students; (b) the transference of ePortfolio learning with PK-12 students; and (c) the use of differentiated assessment for PK-12 students. The ePortfolio was a graduation requirement in the final course of the ETL program. The capstone course, where all evidence of learning was posted, was monitored by students, professors, instructional associates, and stakeholders that consistently held students accountable for posting their work. In addition, the ETL students were encouraged to contribute to their ePortfolios beyond their program of study by continuing to add blog posts, content, and other information that was important to them.

Instrument

The preliminary question in the online survey asked: (a) Are you using or not using your ePortfolio? If participants confirmed, the quantitative sub-questions were asked: (b) What factors contributed to your continued use of your ePortfolio? and, (c) What factors contributed to your discontinued use of your ePortfolio? Sub-questions were set up in a Likert scale format ranging from *strongly disagree* to *strongly agree* and *not applicable*. These questions were sent to all educational technology graduate students to determine which indicators contributed to their use of ePortfolios and to identify factors that did not. The factors listed in Table 2 were considered important in finding out why students continued, or did not continue, to use their ePortfolio in a meaningful way after graduation. The degree of agreement with the Likert scale items in this study indicated whether the participants perceived the factors indicated as a contributing factor, or a non-contributing factor, to their continued ePortfolio persistence.

In addition to the survey, the following qualitative questions were asked during the focus group interviews for those that indicated they would be willing to participate in a semi-structured interview: (a) What are the top three factors that contributed to your continued use of the ePortfolio? (b) What are the top three factors that contributed to your discontinued use of the ePortfolio? (c) What could be done to heighten or improve your interest in ePortfolios? (d) Students who continued to use ePortfolios saw the value in the ePortfolio as a career tool. What are the most important things that can be done to help you recognize the value of ePortfolios? (e) Students who continued to use ePortfolios appreciate the value of authentic assessments. Finally, (f) what are the most important things that can be done to help you appreciate the value of authentic assessments?

Data Collection

All former educational technology graduates were invited to participate in a web-based survey created in SurveyMonkey that was distributed through e-mail. The survey was sent out a total of three times with each survey going out at least 2 weeks apart to elicit responses from a large group of participants to allow for generalization of the study findings. Of the 533 invited participants, 141 graduates completed the survey. Approximately eight participants volunteered to be part of the two semi-structured focus group interviews conducted after the survey. The purpose of the both sets of data was to determine if the two data sets converged or contradicted one another.

Data Analysis

Data from the survey were coded into rating averages for the top five indicators that were consistent with persistent use of ePortfolios. Likewise, data were also coded into rating averages for the top five indicators that were consistent with discontinued use of ePortfolios beyond the program of study. Data was cross-checked for accuracy by the research team. All interviews were transcribed and reviewed for errors by the research committee. Trends and topics shared by the participants were related to the persistent use, or discontinued use, of ePortfolios.

Reliability, Validity, and Transferability

To assure validity of the instrument used, experts in the field were asked to confirm the questions asked were appropriate and clearly articulated to accrue the information collected. This group of experts piloted the survey in a different test survey to ensure that the instrument worked as intended. To establish reliability, several participants that were representative of the target population of students confirmed that the questions asked in the survey were consistent (Creswell, 2015). Transcriptions and data were reviewed for similarities and differences. Findings of this study are written in such a way that each finding will inform the field of ePortfolio practitioners to make informed decisions about the future of ePortfolio learning in higher education.

Results

The online survey and open-ended questions were completed by 141 of the 533 (26%) possible participants.

Table 1 shows the response percent and count for the number of participants that have continued or discontinued their ePortfolios beyond their graduate program. Table 2 shows the indicators with the highest rankings that pertained to continued use or discontinued use of ePortfolios beyond the program of study. Participants were invited to two semi-structured focus group interviews conducted to investigate student values and interest in ePortfolios. Before the focus group interviews occurred, the team of researchers debriefed the participants on the data from the survey results.

Factors that Related to Continued Use

Data from this study suggested that students involved in ePortfolio learning could benefit from authentic learning experiences. Overall, participants indicated that real world projects and authentic artifacts were the top reasons for continuing the development of their ePortfolios. Very close in proximity came ePortfolio learning used as a career tool. In the first focus group interviews, one of the researchers asked how important authentic assessments were to the group of students in which they represented. In response to this question, one member of the focus group stated,

> When [ePortfolio] became less about me . . . and more being about sharing with other people and collaborating and being able to have certain people view things and all the capabilities my google site had, that's when [ePortfolio] became more relevant to me and the light bulb came on.

Table 1
Graduate Students Responses for Continued/Discontinued Use of ePortfolio

Answer option	Response percent	Response count
Yes	17.7%	25
No	82.3%	116

Table 2
Graduate Students' Mean Averages for Continued/Discontinued Use of ePortfolio

	M	
Indicator	Continued use	Discontinued use
Choice of ePortfolio tool/platform	3.48	**3.28** (4)
Control over the ePortfolio tool	3.56	3.21
Choice over evidence of learning (artifacts)	3.72	2.99
Control over the ePortfolio development process	3.60	3.06
Opportunity to be creative with ePortfolio presentation and development	3.52	3.30
Real world projects and authentic artifacts	**3.84** (2)	3.14
Management of ePortfolio	**3.76** (4)	**3.47** (2) (3)
Proprietary software availability after the program	3.64	**3.24** (5)
Assessment of own learning	**3.79** (3)	2.90
Deepened my interest in learning more	3.72	2.60
Access to good examples of ePortfolios	3.72	2.96
My instructor's ePortfolio example	3.65	2.74
Receiving feedback and comments	**3.75** (5)	2.96
Community or social connections in ePortfolio use	3.54	2.98
Personal interest level in ePortfolio use	3.68	**3.47** (2) (3)
Discussion about lifelong use of the ePortfolio	3.60	2.95
School's or institution's attitude toward ePortfolio use	3.60	2.99
Used as a career tool	**3.88** (1)	2.77
Planning	3.70	3.17
Time	3.65	**3.50** (1)

Note. Bolded numbers are in the top five rating averages for the indicator. The number in parenthesis indicates the place of the indicator in the top five from highest rating average to lowest rating average within the top five indicators. Likert scale items ranged from 1 (*strongly disagree*) to 6 (*strongly agree*), with 0 (*not applicable*).

In the second focus group, one respondent shared that the ePortfolio learning felt authentic to the specific course work, but not to the personal career. This respondent was given a choice of platform, but none of the platforms were discussed in detail, so she did not search any further and defaulted to the platform shared in the program.

Data from this study revealed that ePortfolios may provide students with a medium for choice and voice in the learning process. Management of content and assessment of one's own learning were the key indicators that represented choice and voice in the survey. Data from this study suggested that choice of ePortfolio platform is necessary to contribute to continued use of ePortfolios**.** Respondents to the survey referred to ownership of the ePortfolio as follows: "Because it is yours, you are initiating everything that is going on here but you also allow others to share their thoughts and idea." One respondent shared that students need to be aware that they are "in charge of their brand" and "their brand is very important if they are going to pursue careers in educational technology."

Data showed that feedback and comments were of value to students in the ePortfolio process. While participants did not mention feedback specifically, several participants mentioned that an example would have been helpful. Although instructor's example and access to good examples did not make it into the top five reasons that students continued or discontinued to use ePortfolios, many of the participants recollected that "It would have absolutely helped me out to see examples" and "It would have greatly been helpful to see other examples."

Factors that Related to Discontinued Use

The primary factor that related to discontinued use of ePortfolios was time; management and personal interest tied for second and, the third factor was choice of the ePortfolio tool. One participant openly stated that, "Time was a big factor for me." Another participant stated that her ePortfolio was what she was "doing to satisfy the assignment" where she indicated that she felt the connection to her classroom career was irrelevant. On the contrary, another participant stated that "when I started the ePortfolio for the coursework, I didn't really see it as that valuable. I realized what it could become."

The data suggested that personal interest levels in ePortfolios contributed to discontinued use of ePortfolios. This finding is parallel to participants' responses to the open-ended interviews. One participant indicated that no ideas were shared about how the ePortfolio could be used after the program. Another participant indicated that students need to be given some direction about how this applies to their lives after they graduate.

Limited choice and proprietary software were indicated as the third and fourth highest rated factors contributing to the discontinuing the ePortfolio. One participant stated that if ePortfolios were not properly curated, they would be similar to "those 20-page vitae where no one gets past the first paragraph." The same participant stated that the ePortfolio is not going to be this "static thing that's going to exist and solve all of their problems"; rather, it needs to be authentic with curated aspects of the ePortfolio. It was clear that some participants did not fully understand the difference between ePortfolios and the software because one respondent stated that she did not have an ePortfolio, but she did have a Wordpress site.

Discussion

The findings from the study suggest that if learners were provided learning conditions in which they had considerable choice over the learning process, combined with elements of voice, authenticity, and ownership of the process, then ePortfolios could be an invaluable tool and a resource used beyond the program of study. With only 17.7% of students using the ePortfolio beyond the program of study, we can be certain that something can be done to increase ePortfolio use.

Initially, participants did not see the value in building an ePortfolio; the ePortfolio was seen as a course requirement only. One participant indicated that no one shared ideas about how the ePortfolio could be used after the program, although others mentioned the contrary. This finding is important because it confirms that interest level in ePortfolio learning can be connected to how students might use ePortfolios beyond their program. Another participant indicated that students need to be given some direction about how ePortfolios apply to their lives after they graduate, urging that students struggle with the value of ePortfolios. This finding is important because it confirms that lower interest levels in ePortfolios could influence whether students continue to use ePortfolios beyond their program of study. One could assume that if students do not see the value of ePortfolio in the beginning of their degree program, it could hinder their interest level throughout the program. Decreased interest levels could also be a result of an unintentional perception that they have little ownership and autonomy in the developmental aspect of the ePortfolio.

Another finding points to ePortfolios as a valuable tool for students in online programs; however, not all learners reported positive experiences. Learning environments necessitate a design and balance that incorporates personal learning attributes (Bolliger & Sheperd, 2010). Concurrent findings that coincide with

this study suggest that learners agree that expanding the choice of an ePortfolio platform would allow students to focus on their own strengths and creativity. The learning environment could be impacted by faculty guidance and frequent meetings with extended support (Janosik & Frank, 2013).

Our findings revealed the unique feature that management of the ePortfolio produced ratings in the top five for both continued and discontinued use. Could management of ePortfolios be enough to cause a halt in persistence because management takes away from the value of ePortfolio learning? It is also evident that students desire more control over the process, so instructors may wish to introduce learners to using the ePortfolios as a "catalyst" for reflection (Janosik & Frank, 2013, p. 94).

In summary, if ePortfolios are utilized effectively, they can provide a vehicle for deeper learning and meaningful engagement opportunities. Furthermore, ePortfolio learning promotes social pedagogy by paving a pathway that leads to learner reflection and social pedagogies while enhancing institutional change (Eynon et al., 2014). This is very important because employers want to see how learners solve unscripted problems and apply their learning to authentic situations (Rhodes, 2011). When combined with other high impact practices, ePortfolio learners engage in higher order thinking and interconnected learning (Eynon et al., 2014). The results of this study suggest that ePortfolio learning has the potential to dynamically shift from knowledge-bearing repositories and assessment options to an interactive learning tool that promotes learner-centered principles, collaboration, and social constructivism. Further research and a replication of the study could substantiate or dispute the findings generated from this study.

Limitations

As noted in the Methodology section, all former educational technology graduates that used an ePortfolio as part of their graduate program were invited to participate in the study. Of the contact emails provided, there was no way to account for the number of students the survey reached. Since the survey did not reach every student, the results of the survey and interview questions call for further investigation.

Specific demographic information such as years of experience and current job positions were not requested for the preliminary study. This information could have provided some further information to investigate if individuals with varying demographics had similar perceptions. To offset this imbalance, we decided to use a mixed methods design to substantiate and reciprocate any statistical data from this study.

Implications for Future Research

There are several findings from this study that are ripe for future research opportunities. The current study does not describe a precise explication between each of the elements in the learning approach. For example, learner attitudes toward ownership and learner responsibility could provide additional information about student motivation to learn (Shroff et al., 2014). Furthermore, there could be unrecognized consequential effects when learners are given choice and agency of the learning process beyond expectations (Lindgren & McDaniel, 2012)? Additional qualitative data that considers student perceptions of specific aspects of the COVA learning approach might provide some insight into the exclusive relationships between the elements proposed in this study.

As described in this study, ownership and responsibility for one's learning, as it relates to ePorfolios, could play a much larger role than is generally recognized in the literature. In contrast, for learners that engage willingly without any prerequisite of an ideal such as ownership, research needs to be conducted to determine the level at which the learning curve could become too steep (Shroff et al., 2014). Further research into ePortfolio learning could explore student perceptions of learner choice, ownership, voice, and authenticity in the learning process itself. Ultimately, the COVA learning approach could be used to evaluate which aspects of the approach contribute extensively to "significant learning environments" (Harapnuik, 2016, para.1). To extend this further and relate it back to the findings of this study, what relationship does the learner's perception of the ePortfolio's value impact the "essential facet of ownership of learning" (Shroff et al., 2013, p. 154).

The current state of ePortfolio research encompasses methods of assessment, student engagement, reflective ability, knowledge attainment, and critical thinking, to name a few (Bryant & Chittum, 2013). Further questions about transparency of ideas using ePortfolios could be a follow-up to this study. For example, to what degree do students feel vulnerable in sharing their personal ideas during the peer review process that many courses employ (Jones et al., 2015)? The findings of this study contribute to current research on ePortfolio learning and its impact on the learning process, where the findings could be shared across disciplines.

Conclusion

While factors that contribute to ePortfolio persistence are certainly important in the ePortfolio process, there is a much larger conceptual framework that contributes to the power and impact of ePortfolio.

Our current program prompted us to first understand student perceptions about which aspects were important to them in the creation of ePortfolios. Based on the survey and focus group interviews, students revealed factors that contributed to persistent use, and discontinued use, of ePortfolios beyond their program of study. While these factors could not be predicted with certainty, our research and findings remind us that ePortfolio learning is a high impact practice, but has many areas that are yet to be explored. Choice, ownership, voice, and authenticity, as in the COVA learning approach, could be the linking factors that contribute to persistent use of ePortfolios beyond the program of study. Student perceptions of the COVA learning approach and its implications for the field of ePortfolio will be the focus of subsequent research.

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Thinking Skills by Design: Using a Capstone ePortfolio to Promote Reflection, Critical Thinking, and Curriculum Integration

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A capstone ePortfolio is a digital space where students can gather and integrate their learning experiences from their undergraduate careers into a meaningful whole, demonstrate their growth as learners, and connect their learning to the world. The process of creating a capstone ePortfolio equips students with the digital composition skills necessary for creating a professional career ePortfolio, helping them to showcase their strengths for future employment and for graduate or professional school applications. This project piloted an undergraduate capstone ePortfolio program designed to be the culminating experience for juniors upon completion of the general education program (i.e., core curriculum). Pilot program results, based on a group of 18 students from a variety of academic and demographic backgrounds, suggest that the capstone ePortfolio program can serve as a vehicle for promoting reflection, critical thinking, digital literacy and composition, and integration of curricular experiences. This article presents the results of a mixed-method assessment of the pilot and discusses how these results will be used to frame the semester-long capstone ePortfolio program for the undergraduate general education program at a large AAU research institution.

This article describes pilot work for a capstone course, requiring a culminating ePortfolio, within the undergraduate general education curriculum (i.e., core curriculum) of a large AAU research institution in the northeast United States. Although many examples of the use of ePortfolios as educationally purposeful culminating learning experiences in academic majors can be found (Cambridge, 2010; National Survey of Student Engagement, 2011), the capstone course and ePortfolio described here are required for all undergraduate students in their junior year as part of the newly launched general education program (GEP), including transfer students with significant credits of general education completed elsewhere. Due to the scale of implementation and the significant impact this new course will have on requirements for degree completion, a pilot was conducted to assess practical aspects of course delivery, as well as the ability of the course content to help students achieve the desired learning outcomes of the course and of the general education program.

The new GEP, launching in fall 2016 with new and re-designed course offerings, is based on the curricular components of American Association of Colleges & University's (AAC&U) Liberal Education and America's Promise (LEAP) initiative, developed to prepare students in broad thinking and communication skills and emphasizing integrative learning (AAC&U, 2011).

It also may be the first of its kind to incorporate several high-impact educational practices as a purposeful, integrated package to improve student persistence (Carini, Kuh, & Klein, 2006; Kuh, 2008; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; NSSE, 2007; Pascarella & Terenzini, 2005).

This revised GEP is designed to help students learn transferable higher-order thinking skills that will serve them well in educational and career endeavors. It includes: critical thinking, integrative learning, quantitative reasoning, scientific reasoning, ethical reasoning, communication skills, and digital citizenship.

The learning outcomes of the program include the following: Through completion of the general education curriculum, students will

1. attain and apply knowledge in written, oral, and visual communication; mathematics and quantitative reasoning; and natural sciences;
2. acquire, apply, analyze, evaluate, and integrate knowledge from a wide range of disciplines;
3. attain and apply critical thinking skills to define and solve problems;
4. demonstrate an understanding of human and cultural diversity within local and global contexts;
5. acquire the skills, technologies, knowledge, ethical judgment, and personal responsibility for effective citizenship, professional leadership, and lifelong learning.

The goal of the general education capstone and the required ePortfolio is to provide a mechanism through which students can critically review content from disparate general education classes and make connections across them, integrating their work to make broader knowledge connections that can be more easily leveraged and applied in new learning situations (Hauhart & Grahe, 2014; Kinzie, 2013; Mentkowsky & Sharkey, 2011). Specifically, reflection within the ePortfolio allows students to consider how they have been successful in their learning and how learning in the present situation relates to other contexts (Buyarski et al., 2015). From this reflection, they gain practice in

metacognitive thinking, which they can use to help them self-regulate learning processes in future learning situations (Flavell, 1979; Livingston, 2003). The process of reflecting on learning in general education and integrating content from across general education courses increases the likelihood that students will transfer knowledge and skills gained to study in the major and to life outside the classroom (Mentkowski & Sharkey, 2011). Further, it raises the level of importance of the GEP by not allowing it to be something that students can just forget about as they check off courses, but as an experience on which to reflect (Mummalaneni, 2014). This cultivates the realization that it has inherent value for them in later studies and in their lives after college (Eccles & Wigfield, 2002; Kinzie, 2013; Kruger, Holtzman, & Dagavarian, 2013; Wigfield & Eccles, 2000).

The Capstone ePortfolio Pilot as a Learning Experience

A pilot was needed to ensure that the students in this newly revised GEP view the culminating ePortfolio and the capstone course itself as a meaningful part of their educational experience, where students could apply "higher-order thinking, authentic learning, and multilayered decision-making while engaged in an experiential learning activity" (Buzzetto-More, 2013, p. 1), and bring a "holistic understanding to students' educational journeys" (Kinzie, 2013, para. 2). A six-week mini-capstone was proposed. In alignment with the generally recognized purposes of capstones (Kinzie, 2013) and the use of reflective ePortfolios (Cambridge, Cambridge, & Yancey, 2009; Eynon & Gambino, 2016), the design of the pilot was meant to simulate the conditions of a real capstone course and to assess the ability of the online course design, as represented in the capstone syllabus (Appendix A): (1) to engage students in the capstone experience and promote their perceptions of this experience as meaningful to their educations; (2) to promote the achievement of the identified capstone learning outcomes (see Table 1); and (3) to be feasibly implemented across large numbers of students from disparate disciplines, including students transferring in general education coursework from other institutions.

In the pilot, students were required to complete three tasks:

1. upload examples of prior course work to demonstrate the achievement of learning outcomes of each component of the general education curriculum into their ePortfolios;
2. complete one essay in which they reflected on the connections and meaningful integrations of their general education coursework and their

intended field of study, outlining their understanding of general education course topics and how these topics contributed to a deeper understanding of their intended major; and
3. summarize the larger impact of the general education curriculum on their intellectual development during their time at the university delivered via the ePortfolio tool.

This pilot project was designed to determine the extent to which the Capstone ePortfolio experience, in practice, will promote student reflection, critical thinking, and curriculum integration and provide a meaningful learning experience for all undergraduate students, all of which are found in the literature of both ePortfolios and capstones to be productive outcomes of such an educational experience (e.g., Eynon & Gambino, 2016; Gardner & Van Der Veer, 1998; McGill, 2012; National Survey of Student Engagement, 2007). In addition, the capstone provided an opportunity for assessment of the GEP (Berheide, 2007). Artifacts for reflection and inclusion in the ePortfolio were chosen by students, in consultations with instructors. Not all artifacts were required to address every component of the general education curriculum, though all artifacts should address some component of the general education curriculum.

Method

Institutional Context and Participants

This pilot program was conducted in a large public Research I institution in the Northeastern United States. The institution will transition to the new GEP, described above, in the fall of 2016 with the pilot capstone program conducted in the spring semester prior to the program launch. The shortened capstone ran for six weeks during the midpoint of the semester as a hybrid course (*hybrid* to provide additional feedback opportunities in the development stage), with face-to-face opportunities for student engagement, peer support groups, and feedback loops. (The actual capstone will be conducted solely online as proposed in the GEP and to meet capacity needs.) Students participated in the program voluntarily through a proprietary product, the platform being both the course and the vehicle by which they created and hosted their ePortfolios. Although the pilot students had not participated in the new GEP, the pilot was adapted to allow for their own GEP to be incorporated into the new framework.

The study personnel included two doctoral-level teaching assistants and two administration assessment staff. Capstone instruction and course management responsibilities were handled by the teaching assistants, while the administrative assessment staff was

Table 1
Capstone Learning Outcomes

No.	Outcomes
CLO 1	Adapt and apply skills, abilities, theories or methodologies acquired in one situation to new situations
CLO 2	Connect relevant experiences and academic knowledge
CLO 3	Demonstrate an evolving sense of self as learner
CLO 4	Integrate different forms of communication to enhance meaning (prose, sound, visual media)
CLO 5	Formulate a concept of digital citizenship and be able to fashion an online identity that demonstrates an awareness of the public/private divide

responsible for developing and executing the assessment plan. However, the whole team worked together, meeting regularly on the pilot project. In addition, there were general education administrative stakeholders funding and supporting the project.

The participating students were recruited from a variety of undergraduate education programs, including Ronald McNair and Student Support Services Federal TRiO Programs, the Honors College, and programs targeted to support underrepresented and low income students, as well as via the transfer student listserv. Participants were incentivized in several ways. First, they received expert guidance to help them develop their integrative and reflective ePortfolios, which has value in their career and academic development. Second, they were given an opportunity to present at a prestigious campus event, the Celebration of Academic Excellence, which they could include on their resume or curriculum vitae as having been an active participant. Finally, completion of the pilot and all ePortfolio components would result in one credit of successful independent study being added to their transcripts and a deposit of $100 into their Campus Cash accounts.

The "course" had an initial pool of 35 student volunteers, with 25 of them committing to participation. Eighteen students completed the capstone and all requirements and also provided consent to participate in the research component of the pilot project. The primary reason offered for not completing the capstone was "too many other demands on my time." In the exit survey, one respondent selected "the technology was too confusing." Over two-thirds of the participants (68%) expressed a willingness to volunteer for a full semester pilot in the fall.

The final sample of 18 students included students from many different backgrounds and majors. With regard to gender and race/ethnicity, the sample was 72% female and 50% White and 50% Black. Five of the participants were international students. Academically, the students were diverse, as well. For those who gave permission to participate in the study, one was a special admittance student, one was a transfer student, and the remaining 16 were admitted as freshmen. Four students had junior standing and 14 senior standing at the time

of the pilot, having completed the majority of their undergraduate general education curriculum. With the exception of one, these students were high achieving: all participants had cumulative grade point averages (GPAs) over 3.0, with nine (50%) having cumulative GPAs over 3.75. Among the majors represented were single and double majors. including: accounting ($n = 1$), psychology ($n = 3$), social sciences interdisciplinary degree program ($n = 3$), political science ($n = 1$), biochemistry ($n = 1$), biological sciences ($n = 3$), biomedical science ($n = 2$), chemistry ($n = 1$), geological sciences ($n = 1$), biomedical engineering ($n = 1$), and civil engineering ($n = 1$). This diversity allowed for a wide range of curricular foci to be represented in the capstone ePortfolios.

Access to digital technologies ranged across the spectrum, with 64% indicating that they had some access to digital technologies, 27% indicated they had nearly unlimited digital access, and only two students indicating limited access with computer and internet access available only on campus or at public libraries. Most of the students in the pilot (86%), had never taken a class utilizing the ePortfolio platform. Their prior experiences building ePortfolios varied, with the majority (73%) having little to no experience, 18% with limited experience but considering themselves beginners, and only two feeling comfortable with ePortfolio platforms.

Students utilized the Digication ePortfolio software, an online product, to produce their ePortfolios. They were provided a general template to follow but were allowed to deviate from that template (which included a learning philosophy and outline of GEP components as a guide) so that their ePortfolios reflected their own uniqueness, creativity, and variety of artifacts. ePortfolios consisted of text and multimedia, including pictures, video, and music, as well as PowerPoints and PDFs of assignments from a variety of disciplines. In addition, students included curricular and co-curricular experiences. Students were directed to create a curricular ePortfolio, emphasizing learning and development, as well as curriculum integration, compared to a professional ePortfolio, which is styled more on a resume format and aimed at employment goals. The Digication platform allows

Table 2
Approaches to Learning Questionnaire

Scale	α	Pre-test		Post-test		ES
		M	*SD*	*M*	*SD*	
Self-regulated strategy use	0.60	4.17	0.42	4.16	0.65	0.02
Intrinsic learning motivation	0.56	4.28	0.54	4.33	0.58	0.14
Critical thinking	0.86	3.88	0.89	3.66	0.84	0.18
Integrative learning	0.72	4.19	0.50	4.27	0.51	0.18

multiple ePortfolios to be created, and students may adapt their capstone ePortfolio into a professional ePortfolio for future uses. This was not explored in the capstone.

Study Design and Data Collection

This study employed mixed methodology for both the development of the pilot and the research approach. Mixed methods allowed the assessment team to triangulate results. Data were collected in the following ways: (a) pre-post survey, (b) Approcahes to Learning Questionnaire, (c) qualitative analysis of student portfolios, (d) assessments of student assignments using rubrics, and (e) student feedback via forums.

Instructor-created pre-post survey. The instructor-created pre-post survey contained a combination of open- and close-ended questions and was administered via Google Forms. The pre-survey had ten questions, and the post-survey had 22 questions. This survey was designed to assess students' understanding of digital literacy, technical skills in digital composition, and the purpose of a reflective capstone ePortfolio as compared to a professional presentation ePortfolio. In addition, in the post- version, students were asked to identify aspects of the course that were most and least helpful to them in completing the weekly assignments and the culminating ePortfolio.

Approaches to Learning Questionnaire. The 22-item online Approaches to Learning Questionnaire, developed by Van Zile-Tamsen and Livingston (1999) to assess students' perceptions of growth in higher-order thinking skills as they progressed through the GEP, asked students to rate the extent to which statements describe themselves as learners on a five-point scale, from strongly disagree to strongly agree. This questionnaire contains subscales relating to Self-Regulated Strategy Use, Intrinsic Learning Motivation, Integrative Learning, and Critical Thinking. Students responded to the questionnaire twice, during both the first and last week of the pilot. This measure is still being piloted but has good concordance with agreed-upon definitions of self-regulated strategy use (Van Zile-Tamsen & Livingston, 1999), intrinsic motivation for learning (Eccles & Wigfield, 2002), integrative

learning, and critical thinking (American Association of Colleges & Universities, 2011). Cronbach's alpha internal consistency reliability estimates and descriptive statistics for the pre- and post- administrations are shown in Table 2. Evidence for the reliability of the scales indicates that Integrative Learning and Critical Thinking are much more reliable than Self-Regulated Strategy use and Integrative Learning. However, all results for this instrument should be considered primarily exploratory at this time.

Qualitative analysis of student portfolios. A qualitative thematic analysis of student portfolio content examined student use of ePortfolios to reflect, think critically, and integrate their curriculum experiences.

Assessments of student assignments using rubrics. As part of the instructional process, student assignments were assessed with rubrics developed by the instructors. (Students provided feedback on usefulness of rubrics). Student essays and artifacts were submitted to student ePortfolios by students through the ePortfolio platform. The platform was used for both peer and self "grading," as well as reflection on artifacts. See sample rubric adapted from the AAC&U Value Rubrics in Appendix B. Rubrics were used to assess artifacts individually and the ePortfolio holistically on learning outcomes and related to GEP components.

Student feedback via forums. The instructor led three face-to-face and online forums to collect students' feedback. The instructors also maintained a detailed record of interactions with students that occurred during office hours and electronically.

Data Analysis

Approaches to Learning Questionnaire. Changes in pre- and post-scores were examined to determine if students changed in their perceptions of their approaches to learning after completing the capstone requirements. Since the sample size was so small (12 students who completed both pre- and post-questionnaire), effect sizes were used to determine the magnitude and direction of changes rather than traditional paired samples *t* tests.

Qualitative analysis of student portfolios. Student ePortfolios were qualitatively analyzed for reflection, critical thinking, and integration of the academic curriculum. Standards of qualitative analysis, including thematic coding, were utilized. Each ePortfolio was analyzed individually and then the full set was re-analyzed as a whole with the set of codes for appropriate fit. Qualitative analysis was informally triangulated with instructors' understanding of rubric assessment outcomes in areas of reflection and integration of curriculum.

Results

Instructor Pre-Post Survey, Student Forums, and Office Hours Feedback

Feedback was collected by the instructor through surveys, in-person and online student forums, and office hour discussions. The following is a summary of the surveys and those notes. Throughout the pilot course, students expressed appreciation for a moment to look back over their coursework, surprised by all they had done and by the contrasts between who they were as freshmen and the students they had become. Intellectual growth was witnessed when students realized that their positions on controversial social and political issues had changed. In regards to introspection about their growth over their curriculum, one student stated, "I read my first research paper again and I couldn't believe those were my words. I totally disagreed with everything I wrote as a freshman!" Reflection could be found in other statements, as well. One student, for example, noted: "I haven't looked back at the things I have done throughout my time here . . . in a comprehensive and thoughtful way like this before." Another student stated, "The sky's the limit on all the things that make you unique." With regard to curriculum integration one student noted,

> Reflecting back on my work made me realize how a lot of it actually impacted me as a student, even though I did not think it did at the time. I would not be as well-rounded, open minded, or understanding as I am today it if were not for my general education courses.

Another student said, "It made my gen ed courses actually mean something."

Unexpectedly, the instructors were impressed by the variety and depth of the stories, and narratives the students shared, providing insight into their lived experiences. The students reflected on and shared moments of discovery. Also, through peer groups and the pilot program, students developed a sense of community (as evidenced by their desire for a group picture at the Celebration of Excellence). Group cohesion was surprising, as this was an online cohort for a short six-week program.

From the pre-post instructor survey overall, the students' understanding of digital literacy did not change from the beginning to the end of the pilot. When asked to define "digital literacy" on the opening survey, most students responded with "the ability to use technology" or "to find information" on the Internet. Only one student defined digital literacy as "maintaining some kind of profile or presence" on the Internet. When asked, "How has your understanding of digital literacy changed since completing the mini-course," many responded "not a lot" or "I'm still not sure what digital literacy means." Of the few students who noted a change in understanding, one wrote, "Being able to use such a tool is no longer sufficient enough. Being able to maneuver such tool to present one's own thoughts and experiences as clearly as possible is my new understanding of 'digital literacy.'" The opening/exit surveys showed a greater understanding of how an integrative capstone ePortfolio differs from a professional career ePortfolio. The surveys, moreover, showed an improvement in technical skills using a digital media platform and a strong likelihood to use these new skills on digital media projects in the future.

Furthermore, the survey indicated the order students made greatest use of the following help resources: (1) ePortfolio startup guide (86%), (2) e-mails to instructor (64%), (3) peer support (50%), (4) visual guide to ePortfolios (36%), (5) other online help (e.g., ePortfolio platform videos; 21%), (6) e-mails to support technology support (14%), (7) scheduled office visits (7%), and (8) open lab walk-in hours (0%). Utilizing these resources and participating in the project helped the students develop their abilities. Of the 14 students who responded to the survey, a majority indicated improvement in using a digital media platform (mean 3.36/4.0) and an increased likelihood of using their technical skills in other digital media projects in the future (mean 3.64/4.0).

One resource students did use was the rubrics. Students made good use of the evaluation rubrics for self-reflection in developing their ePortfolios, with most students having consulted the rubrics for two or more assignments prior to submission, $M = 2.93$, $n = 14$. Also, on a scale of 1-5, a majority of students (57%) ranked clarity of the rubrics at a 4 (5 = *clearly articulated learning outcomes*). The mean was 3.57 ($n = 14$).

Finally, the exit survey showed great satisfaction with the ways in which the pilot course fulfilled student expectations, with 43% responding 5/5 (*fully satisfied expectations*) and 36% at 4/5 (*nearly fulfilled*), $M = 4.21$, $n = 14$). While one student expressed surprise at the amount of work involved in the pilot, open responses to

"unexpected outcomes" were overwhelmingly positive. Many students noted surprise at realizing how much work they had actually done as an undergraduate, how many connections they were able to draw, how much their general education curriculum had actually impacted them as a student; they even realized the existence of "missed opportunities" after looking back over their experiences.

Approaches to Learning Questionnaire

As shown in Table 3, students' scores on the self-regulated strategy use scale remained quite similar from pre- to post-questionnaire, increasing a negligible amount ($d = -0.02$). In each instance, students rated themselves on the high end of the scale in terms of monitoring and regulating their own learning. With regard to integrative learning, students' scores remained on the high end of the scale for both questionnaire administrations, but in terms of effect size, there was a small increase from pre to post ($d = 0.18$). In contrast, students' critical thinking scores and intrinsic motivation for learning scores decreased a small amount from pre- to post-questionnaire ($d = 0.18$ and 0.14, respectively). Interestingly, they rated themselves initially lower in critical thinking at the beginning, and they were even less confident in their Critical Thinking skills at the end of the pilot. In terms of initial ratings, intrinsic motivation for learning was highest at the beginning and also decreased. These findings are not surprising in light of the qualitative analysis of their portfolios.

Qualitative Analysis of Student Portfolios

In general, the reflective essays took the form of personal autobiographical narratives that were far more reflective than integrative. Even when present, critical reflection tended toward autobiographical narrative, with an inward focus upon self instead of greater, global issues—again, with a few notable exceptions. With regard to critical thinking, students made judgments, evaluations, and analyses of their own experiences, artifacts, and education as presented in their ePortfolios. The majority of critical thinking was represented through the individual artifacts, mainly submitted as unique assignments, and not represented in the personal learning statement or reflective essay. However, the level of both reflection and integration of curriculum represented in the ePortfolios varied among the students. More specifically, several themes emerged from convergent theme analysis. These included attributes, emotion, values, narratives, reflections, and integration of curriculum.

Attributes included students' use of their ePortfolios to share their identities in regards to their demographics and academic data as direct points. For some students, this information was stated in language similar to other online profile introductions; for example, "I'm an international student from Ho Chi Minh, Vietnam (the name 'Saigon' might ring a bell). I enjoy traveling, cooking Vietnamese cuisine, making crafts, and catching up on current politics, human right[s] issues, and East Asia/Southeast Asia's news." For others, the description became more narrativized; for example,

> As a single mother of two teenage boys and a full-time student, I am in a unique class of adult learners . . . and I take great pride in both roles. As one can imagine, combining these two demanding roles consumes the majority of my time, and leads to many late nights and little sleep, but I wouldn't give it up for anything! My children are my world, but coming back to school has given me something that I can be proud of outside of being someone's mother.

Others presented their identities in resume format, which blended the genre conventions of presentation and reflective portfolios. In addition, these were often accompanied with pictures containing descriptions. Their identity attributes were evident not only in their introductory page but throughout their learning philosophy and reflective essays when they reflected on their experiences while identifying who they were: "In my sophomore year I became a Teaching Assistant for this course. I recognized the need for a TA among my classmates and was eager to volunteer as a TA."

Second was the use of ePortfolios to express emotion and values. Students would share their viewpoints, standpoints, beliefs, and attitudes and portray their emotions and values through their discussions and choice of visual media. For example, many students chose visual images of experiences that held great passion for them in extracurricular realms of their education, such as study abroad experiences, connecting with others, family, and friends, and pictures that represented their cultural and ethnic heritage. In one picture from a trip abroad, a student described the individual she was hugging and wrote, "I've visited the Dominican Republic three times during spring breaks to teach English. While there, I discovered a passion for teaching that I brought back to [university] with me!" Furthermore, when discussing their values related to learning they used words related to passion and strong desire to engage in learning. In another example, one student stated,

> I wanted my college experience to be more than this, so I pushed myself . . . and spend more time early on learning the material . . . In order to truly learn I understand that not only will it take time, but it will also take a lot of motivation. I would say I motivate myself to learn . . . Learning enables me to broaden my perspectives and become a better educated, more

well-rounded person; even if I am not particularly interested in the material, I recognize that there is still value in gaining knowledge.

Another stated, "Learning has been a strength and passion of mine that has kept me going through the years."

Students also used their ePortfolios as a reflective tool. Although specifically prompted, they presented well-developed reflective essays and descriptions of artifacts that shared stories with a sense of connection to something deeper or broader than the surface artifact or statement being displayed. One student included an artifact that was her internship reflection journal. Most students demonstrated strong reflection skills. Only three of the 18 students had reflection skills that were lacking or basic as demonstrated by the portfolio as a whole. One student reflected,

I chose none of the samples for the mere fact that I did extremely well or utterly terrible on them or in the course; they were chosen to depict growth and portray that there is always room for improvement as one continues to pursue the undergraduate career and even beyond that.

Many reflective statements demonstrated that students were truly able to make connections beyond surface observation. For example,

I think this essay is vital to include because it explains my thoughts and concerns prior to my service. I knew that my service would be a learning experience for me, but I was unsure what I would be taking away from it.

Moreover, these reflective statements also showed students developing more nuanced approaches to their learning situations as can be seen in the following response: "Since the course, I have grown to learn that it is okay to have different opinions than others; one person's opinion is not necessarily greater than another's." Students also further established developments in their understanding of the complexity of meaning: "Ever since writing this paper I have been able to dig deeper when researching and analyzing other topics. I have learned to look beyond the surface in order to truly find the meaning behind certain things."

Lastly, integration of curriculum was a theme expressed in the discussion of academic experiences beyond single experiences or courses. Some students spoke to how their curriculum actually focused in the integration:

Interestingly, my course choices foreshadowed the path I would eventually end up taking. Courses such as developmental psychology and parenting displayed my inner desire to learn how the mind

works and use that knowledge to help people better their lives! . . . I also had a heavy scientific course load including anatomy, chemistry, and nutrition. I have always found the biological sciences attractive. I am unendingly intrigued by the inner workings of the human body and continue, to this day, to seek out opportunities to learn more about how the body works!

Others spoke more broadly to the integration of the curriculum connecting it to their personal and career lives:

Through my general education requirements . . . I was able to explore these empathy-driven interests. I explored cross-cultural understandings, economically disadvantaged communities, race in America, and the legal system as it relates to morality. In each of these courses, I felt the fibers, the empathy which motivates me, resonate. As I explored the variety of stories so often forgotten or overlooked by others, my curiosity in the human experience only expanded, and it still expands with my majors.

Another student furthers this sentiment, stating that

By my senior year I really began to appreciate all the opportunities that I have had to learn. Three years ago, I thought my World Civilizations class was futile to me as an Accounting major. As I reflect back . . . I realize that the class did [affect] me, not necessarily the specific learning material, but with the exposure I have gained by taking the course. I feel like I understand people better and their cultures. I understand others viewpoints and the things that are meaningful to them. Specifically, this impacts my role as a global citizen because it is important to have awareness of what is going on in the world.

Student Artifacts Assessed by Rubrics

Rubrics, based on the LEAP rubrics, were utilized to assess student work. Several themes emerged from the use of these rubrics.

"Connections" took the shape of unfolding student self-discovery, with personal narratives of how students discovered their major and style of learning, and recognized their personal growth as a student. It was difficult to identify specific evidence of connections between "examples, facts, or theories from more than one field of study or perspective." Because of the autobiographical nature of the reflections, the unifying or "connecting" factor was the individual student, usually limited to one field of study.

Evidence of ability to "adapt and apply skills" most often appeared in community service, experiential learning, or alternate break experiences, where students used their language, math, and science skills to help others, contribute to an internship assignment, or participate in cultural exchange programs. Students who had not participated in activities beyond the classroom showed difficulty in fulfilling this portion of the capstone. In applying this portion of the rubric, it was difficult to distinguish between a level 3 and 4, as a judgment had to be made whether a student was solving a *difficult* problem (vs. a problem), a *complex* issue (vs. an issue), and whether or not they had done so in an original way. In many cases, the students narrated problems of a personal nature, such as locating student help services on campus or pursuing a social science degree instead of entering the medical field. There was also evidence of ability to adapt and apply skills within students' academic coursework samples, but these were applications to individual problems without evidence of transfer to new situations.

How students "connect relevant experiences and academic knowledge" revealed, through the rubrics, an amount of overlap between this category and "Articulate Connections" above, especially since both categories emphasize connections between multiple fields of study. The added element of this category seems to be an emphasis on experiences outside the classroom. If anything, this category more effectively addressed the sort of reflections in the pilot.

Demonstrating their "sense of self as an evolving learner" category was the easiest to validate, since both the learning philosophy statement and reflective essay offered an opportunity for students to address their ongoing progress as learners and to project plans for themselves into the future. This category was especially well suited to the mode of personal reflection the students adopted in their essays.

In the rubric theme "integrate different forms of communication," there was much room for improvement, especially at the point of integrating different forms of communication. While every student at least attempted to create a multi-media design, few actually "integrated" their visual and textual material. Videos were rare and presented with little to no commentary to "enhance meaning, making clear the interdependence of language and meaning, thought, and expression." Future iterations of the project may need to place greater emphasis on citation of sources for images as well as verifying that embedded media actually "works" (example: certain add-ons work for Mac but not for PC).

Finally, there were the criteria for "digital citizenship." While the instructors were confident in the students' ability to present themselves in a responsible manner, it was difficult to find evidence of deeper critical thought regarding global-digital citizenship since there was no single place for students to articulate explicitly their understanding of digital citizenship in the ePortfolio assignment.

At this time, the rubric categories are not strongly supported by actual evidence in the ePortfolios. As a courtesy to our volunteer pilot students, the instructors merged certain aspects (such as digital citizenship and collapsing the two connections categories into one) when evaluating their work, pending further revisions to the program (see below). The current capstone ePortfolios yielded meaningful results to the students, but fell short when held against the rubric standards, as currently worded. For many categories, it was difficult to determine what distinguished a 2 from a 3 or a 3 from a 4. For example, what evidence would we look for to determine whether a student uses or adapts skills to new situations, or to illuminate concepts vs. deepen understanding?

Overall, the students had a more positive experience using the evaluation rubrics for self-evaluation than did the instructors. While the rubrics apparently articulated the learning outcomes in a way that is helpful to the students, the instructors found it difficult to align the rubrics with tangible evidence from the ePortfolios. That being said, the student self-evaluations of the final ePortfolios were well in keeping with instructor evaluations. Few students scored themselves either significantly higher or lower than marks given by instructors.

Discussion

The capstone course was designed to foster critical thinking skills through a variety of tasks and processes within the capstone project. For example, students had the opportunity to maximize the use of hierarchy for sections, pages, and modules, which promoted conceptual understanding. For students who opted to present their written content in PowerPoint format (which helps to fulfill the multi-media requirement), the slides needed to be accompanied by either a written or oral script that meets the general requirement for the scope of the composition assignment (translated as minimum word count). Depth and development of thought was lacking in all PowerPoint format presentations. In addition, students own ratings of their critical thinking skills decreased a small amount after completion of the pilot.

Reflection was promoted throughout the project through several integral assignments, such as the philosophy statement and the reflective essay. Choosing which artifacts to include over the course of their curriculum required critical reflective observation on the part of the students. Better instruction for students is needed on the rhetorical moves necessary for

incorporating and developing examples in a thoughtful, reflective manner rather than simply naming a title of a course or mentioning hastily a relevant experience in their essays. The current reflective essays and learning philosophy statements tend to offer broad generalizations, with little support or development. Individualization is important in reflection. It was learned in the pilot that we must guide students through the process of individualizing the general template into their own design, reflective of their interests and philosophy of learning. An opportunity for increasing critical reflection might be in the philosophy statement; for example, recasting the current learning philosophy statement to address the meaning of digital literacy, digital citizenship, and the ethical challenges and obligations of lifelong learning in a digital world. The style of writing for this essay should be critical reflection rather than personal autobiographical narrative, apart from specific experiences related to ethical challenges of digital citizenship.

With regard to integration of the curriculum, the students did a thorough job of transferring their undergraduate experiences into quality ePortfolios and demonstrating concrete learning in the realm of the general education curriculum. Along these lines, reflective ePortfolios lend themselves to such curricular developments in that they are open to metaphorical conceptualization, which allows students to build connections and engage in high-order processes of representation. Rather than optional supplementary material, "beyond the classroom" experiences should be required as an integral component of the capstone ePortfolio. Coursework samples and experiences beyond the classroom can be accompanied by a brief written introduction from the student that frames the significance of the project, assignment, or experience. Even a simple criteria statement (why this sample was chosen) would be helpful to evaluators, as well as an important preliminary step towards the final reflective essays. Brief (i.e., 50 to 100 word), required explanations of each artifact promote synthesis and cohesion of the artifacts. One challenge with integration of curriculum in this pilot was found in the assessment through the rubric. In teaching the full capstone, stating more clearly the parameters the reflective essay, which should draw connections across academic disciplines and connect relevant experience with academic knowledge, will be highly important. The essays should demonstrate application of skills to solving complex problems, if the current rubric is to be an accurate reflection of outcomes. More explicit writing instruction will need to be developed for each assignment, detailing style, tone, and rhetorical conventions that will clearly locate students' ability to synthesize material. We currently cannot validate, for example, areas in which students have made connections or applied skills. General education outcomes would need to be made explicit in the evaluation rubric, in terms of what sorts of connections the students are to formulate, and whether they are drawing upon academic coursework or experiences beyond the classroom. For example, students' ability to think critically about global issues, even if clearly articulated in their writing, may or may not mean they have achieved the stated learning outcomes of drawing connections or adapting skills to explore complex problems.

Digital literacy was another important element of the capstone ePortfolio. Building on their communication skills in this digital platform made it easier for students to envision their readers. The ePortfolio platform in and of itself allowed students to engage in digital citizenship. Students became part of a digital community, which prompted instructors to discuss community membership and managing access to content. Visual rhetoric was crucial to the aspect of digital literacy in the capstone. Here, the ability to establish a guiding idea that unifies the ePortfolio visually and conceptually will be an important concept to develop further. Moving forward, there is a need for direct engagement with topics of digital literacy, digital citizenship, and ethical challenges in a digital environment. What was thought would be an implicit outcome will need to be made explicit in learning modules or modifications to ePortfolio assignments.

Recommendations and Future Directions

Overall, the pilot was a success in generating feedback on how the capstone might provide the institution with an understanding of how students can present knowledge, skills, and abilities. The capstone pilot provided evidence about how well the syllabus was developed to guide the instructors in facilitating the course, in addition to the logistics of administering the capstone as an online course.

First, not all students have high autonomous access to information communications technology (Robinson, 2009). Students' ability to present higher order thinking skills through a technology such as an ePortfolio requires a technology skill-base. The instructors built in peer support groups and instruction, which should be maintained, but 1:1 instruction and the platform learning curve were time consuming and, early on in the pilot, were found to detract from the main learning outcomes of the course. In the actual implementation, these problems may be mitigated by the fact that students will be exposed to the platform as early as freshman year (with the exception of transfer students). However, support documentation will need to be more robust and may include video tutorials and alternative active learning modes.

Second, the rubrics will need to be adapted to be more responsive to assessing critical thinking, reflection, and integration of curriculum. The instructors struggled with using the rubrics, as currently written, to assess these outcomes. Further refinement will be needed, as well as calibration with additional instructors and teaching assistants.

Third, additional assignments will be included in the full semester capstone, further complicating the syllabus, measures of student learning, and assessments. A full semester and the chance to provide multiple opportunities for students to present their work in ePortfolios will likely increase their abilities to demonstrate higher order thinking skills. However, while there will be more time to execute the activities of the ePortfolio, caution will be needed for the instructors and students to have the required support to utilize the ePortfolio tool to represent these outcomes to a greater degree and complexity.

Conclusion

Although there is room for improvement in the execution of the curriculum design, both instructors and students found the capstone ePortfolio experience to be fulfilling in meeting the goals intended of the pilot. Multi-method assessment shows that a capstone ePortfolio course experience can be valuable in giving students a chance to integrate their general education curriculum and demonstrate their higher-order thinking skills in a digital space. Capstone ePortfolio experiences offer excellent opportunities for students to reflect on their undergraduate careers as well as for institutions to assess the knowledge and skills that students have gained throughout the curriculum. A well-developed capstone curriculum design and rubrics help guide these opportunities.

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CAROL VAN ZILE-TAMSEN is currently the Associate Director, Curriculum and Assessment, UB Curriculum in the Office of Undergraduate Education at the University at Buffalo, and serves as an adjunct associate professor in the Counseling, School and Educational Psychology department in UB's Graduate School of Education. Van Zile-Tamsen's primary focus involves Student Learning Assessment and Program Evaluation, and she teaches courses related to educational testing, psychometrics, and statistics. She has been actively leading assessment work at UB since 2012 in her previous roles as Associate Director for University Accreditation and Assessment and Associate Director for the Center for Educational Innovation. She was the co-chair of the UB Middle States Decennial Review Steering Committee from 2012-2014; UB was fully reaccredited in 2014. In addition to her work at UB, Van Zile-Tamsen helped develop the SUNY Council on Assessment's Student Learning Assessment certificate program and continues to teach the final course in the series.

CHERYL A. EMERSON has assisted in the development of SUNY Buffalo's ePortfolio program since its pilot phase in Fall 2014, beginning with the integration of ePortfolios into the English composition classroom. She has served on the faculty senate Capstone committee, assisted with ePortfolio technical training and faculty development workshops both at UB and at various digital education conferences, and currently serves as the lead TA for the Capstone component of the new UB Curriculum. In 2015, Cheryl received the graduate student essay award from the New York College English Association for her essay "Piloting ePortfolios: Repetition, Difference, and Student Self-Formation." She is currently a doctoral student in Comparative Literature at UB with interests in Continental philosophy, aesthetics, and narrative theory. Her research seeks literary applications of Merleau-Ponty's phenomenology as encountered in his course notes and writings on literary language.

MATTHEW HERZOG currently a PhD candidate in the department of Comparative Literature at SUNY Buffalo. His teaching and research interests span: composition, writing studies, 19th and 20th century British and Irish writing, modernism, digital humanities, cultural materialism, ePortfolio and blogging pedagogies, and writing and first-generation college students.

Appendix A
Syllabus and Assignment Outlines

University at Buffalo
The State University of New York

UB Pilot Capstone Spring 2016

Instructor: Cheryl Emerson, cherylem@buffalo.edu
Office location and hours:
Walk-in lab hours: Thursdays, 1:00-3:00pm, 212 Capen, CEI (Center for Educational Innovation, 2rd floor of Silverman Library)
Online and additional office consults available by appointment

COURSE INFORMATION

Dates/Times: February 29 – April 4, 2016
Spring Break: March 14-18 (no assignments)

Credit: Students who satisfactorily complete all requirements and submit the final ePortfolio will receive 1 credit of UE 499 Independent Study.

Location: Online, following group orientation session. The 6-week pilot course is asynchronous with walk-in lab hours as well as instructor online support

Other Dates and Times:
Pilot Capstone Orientation: Monday, February 29, 5:30 pm, CEI Open Student Forums: [TBA]
*Volunteers are asked to attend the orientation session and participate in one or more of the 3 open student forums

COURSE DESCRIPTION

The Pilot Capstone is a 6-week mini course designed to be a trial run of the full UB Capstone course beginning Spring, 2017. The UB Capstone will be the culminating experience of the general education program, the UB Curriculum. The Capstone is not a seated class, but rather a digital space set aside for thinking, reflecting and weaving together elements of the program through the creation of a Capstone ePortfolio: a multi-media, web-based platform where students will gather and integrate their learning experiences at UB into a meaningful whole, demonstrating their growth and development as learners.

The Pilot Capstone will include selected components of the full Capstone. A completed Pilot Capstone ePortfolio will consist of:

- A personalized home page that serves as a brief introduction to the student, his or her studies, co-curricular work and career goals.
- A learning philosophy statement which describes the student's current beliefs and approach to learning and how this has evolved since enrolling at UB, including the influences that UB instructors and coursework have had on the student's learning philosophy.
- Examples of completed papers and assignments from various areas of the student's undergraduate coursework.
- One reflective essay that seeks to integrate various aspects of the student's undergraduate learning experience.

- Any additional optional materials the student chooses to add, such as resume or portfolio of completed work, or summaries of study abroad or relevant extra-curricular experiences central to the student's growth as a learner.
- One or more ePortfolio pages that draw upon the multi-media design features of the digital platform. Students will be provided with ample technical training and support in digital writing and composition in multi-media formats.

COURSE PREREQUISITES

Student volunteers for the Pilot Capstone may be juniors or seniors from any major or transfer students with junior or senior status who have completed a minimum of 60 credit hours.

COURSE REQUIREMENTS

- Attendance at the **Pilot Capstone Orientation** session Monday, February 29, 5:30 pm [location TBA] and participation in one or more of our 3 **Open Student Forum**s [dates and times TBA]. The Open Student Forums will provide a place for students to discuss their experience with the Pilot Capstone Course with instructor, peers, and CEI staff members to offer suggestions for greater effectiveness of assignments, and to share any other concerns or questions).
- On time completion of weekly online discussion topics and assignments (listed below)
- Participation in pre and post student surveys to aid in the assessment of the ePortfolio program and to provide feedback to instructor and administrators.

STUDENT LEARNING OUTCOMES

Upon completion of the Pilot Integrative Capstone, students will be able to:

Course learning outcome	Maps to the following program outcomes / competencies:	Delivered through the following instructional method(s):	Student achievement assessed with the following method(s)/assignments:
Articulate connections across different academic disciplines and perspectives.	UBGE, SUNY Critical Thinking, MSCHE Critical Analysis and Reasoning	Online Instructional Materials Tutorials Consultation with instructor	Reflective Essay ePortfolio
Adapt and apply skills, abilities, theories or methodologies acquired in one situation to new situations.	UBGE, SUNY Critical Thinking, MSCHE Critical Analysis and Reasoning	Online Instructional Materials Tutorials Consultation with instructor	Reflective Essay ePortfolio
Connect relevant experiences and academic knowledge.	UBGE, SUNY Critical Thinking, MSCHE Critical Analysis and Reasoning	Online Instructional Materials Tutorials Consultation with instructor	Reflective Essay ePortfolio
Demonstrate an evolving sense of self as learner.	UBGE, SUNY Critical Thinking, MSCHE Critical Analysis and Reasoning	Online Instructional Materials Tutorials Consultation with instructor	Philosophy Statement

Integrate different forms of communication to enhance meaning (prose, sound, visual media).	UBGE, SUNY Basic Communication Skills, SUNY Information Literacy, MSCHE Witten and Oral Communication, MSCHE Technological Competency	Online Instructional Materials Tutorials Consultation with instructor	ePortfolio
Formulate a concept of digital citizenship and be able to fashion an online identity that demonstrates an awareness of the public/private divide.	UBGE, SUNY Information Literacy, MSCHE Technological Competency	Online Instructional Materials Tutorials Consultation with instructor	ePortfolio

Note. UBGE = UB General Education; SUNY categories in the above table are those required by the SUNY General Education Program (http://system.suny.edu/media/suny/content-assets/documents/academic-affairs/general-education/GenedCourseGuidelines_20120530.pdf), and MSCHE categories represent the areas of general education required by the Middle States Commission on Higher Education.

GRADING POLICY

Assignments will be graded based upon rubrics for each separate assignment as well as the final ePortfolio. Students will be provided with rubric criteria in advance of each assignment to be weighted as follows:

Weighting	Assessment/assignment
10%	Home Page
20%	Learning Philosophy Statement
20%	Reflective Essay
10%	Proficiency in multi-media design *(may be demonstrated on Home Page, Learning Philosophy Statement, or Reflective Essay)
40%	Overall ePortfolio
100%	

Final Grades:

Although your 1-unit independent study credit will be an "S" for "Satisfactory Completion," I shall provide instructor feedback on separate assignments using the traditional percentage range. Percentage grades are for your information only and will not appear on your student transcript!

Grade	Quality points	Percentage
A	4.0	93.0% -100.00%
A-	3.67	90.0% - 92.9%
B+	3.33	87.0% - 89.9%
B	3.00	83.0% - 86.9%
B-	2.67	80.0% - 82.9%
C+	2.33	77.0% - 79.9%
C	2.00	73.0% - 76.9%
C-	1.67	70.0% - 72.9%
D+	1.33	67.0% - 69.9%
D	1.00	60.0% - 66.9%
F	0	59.9 or below

Incompletes (I/IU):

Because students are enrolled in the Pilot Capstone course on a volunteer basis, a grade of Incomplete (I/IU) will not be posted to the student's transcript. However, it is expected that each Pilot participant will satisfactorily complete each of the course requirements. Students unable to complete the requirements will forfeit the 1-unit independent study credit and award of Campus Cash.

ACADEMIC INTEGRITY

Academic integrity is a fundamental university value and equally expected of students in the Pilot Capstone course. Through the honest completion of academic work, students sustain the integrity of the university while facilitating the university's imperative for the transmission of knowledge and culture based upon the generation of new and innovative ideas.

- Link to the university Undergraduate Academic Integrity policy:
  (http://undergradcatalog.buffalo.edu/policies/course/integrity.shtml)

ACCESSIBILITY RESOURCES

If you have any disability which requires reasonable accommodations to enable you to participate in this course, please contact the Office of Accessibility Resources, 25 Capen Hall, 645-2608, and also the instructor of this course. The office will provide you with information and review appropriate arrangements for reasonable accommodations. http://www.student-affairs.buffalo.edu/ods/

SCHEDULE

Although the course is not seated and delivered asynchronously, you will be expected to maintain satisfactory progress by keeping pace with weekly milestones:

Date	Topic	Required readings/assignments(s)	Due date
Week 1: 2/29-3/4	Introduction to the Capstone ePortfolio: concept and design; Basics of Digital Literacy	**Readings:** UB ePortfolio Startup Guide and Visual Guide to ePortfolios **Assignments:** Opening Welcome Survey (online); Completion of student Home Page	Friday, 3/4
Week 2: 3/7-3/11	What is a "Philosophy of Learning"?	**Assignments:** Posts to "Philosophies of Learning" discussion board topics in Digication; completion of Learning Philosophy Statement	Friday, 3/11
Week 3: 3/14-18	**SPRING BREAK!**	**NO ASSIGNMENTS!**	
Week 4: 3/21-3/25	"Curating the Exhibit": Criteria for Choice	**Assignments**: Posting of individual "criteria" statement to online discussion board; completion of Coursework Samples page in ePortfolio	Friday, 3/25
Week 5: 3/28-4/1	"Modes of Reflection"	**Reading:** [Annie Dillard reflective essay: title TBA] **Assignment:** Discussion board response to reading; completion of Reflective Essay	Friday, 4/1

Week 6: 4/4-4/8	Peer review and self-evaluation (rubric)	**Assignment:** Final Pilot Capstone ePortfolio Due; exit student survey (online)	Friday, 4/8

COURSE MATERIALS

- UB ePortfolio Startup Guide (online pdf)
- The Visual Guide to ePortfolios (online pdf)
- Digication ePortfolio (accounts provided to students)
- Other course documents posted through Digication

ATTENDANCE POLICY

Online presence: students are expected to participate in weekly online discussions and activities and to submit weekly assignments by date due. Extensions for weekly online activities or due dates of assignments may be granted for family or health related emergencies. Because the weekly activities are self-paced, students are encouraged to plan ahead to avoid conflicts with religious holidays or school athletic commitments. Extensions will be granted at the discretion of the instructor. Unexcused late work will result in a loss of 5% credit each day, deducted from the weekly assignment grade.

Physical attendance: By committing to the Pilot Capstone course, students agree to attend both the Pilot Capstone Orientation session (date listed above) and one or more Open Forum discussions.

ONLINE DECORUM

- Students are expected to maintain a respectful, professional tone in all online discussion board topics as well as material posted to ePortfolios. The practice of appropriate Online Decorum is a necessary component of responsible Digital Citizenship as well as one of the non-quantitative learning outcome goals of the Pilot Capstone course. Failure to maintain Online Decorum may result in dismissal from the Pilot course.

Close Reading: Engaging and Empowering History Students Through Document Analysis on ePortfolio

Jordi Getman-Eraso and Kate Culkin
Bronx Community College

This article examines the intersection of the scholarship on ePortfolio and history pedagogy through an analysis of the success of the integration of Digication's Conversations feature into history courses at Bronx Community College (BCC). History professors at BCC have used the feature, which allows people to highlight and comment on text and respond to comments, to have students contribute to group analyses of primary source documents. This exercise combines the active learning, reflection, metacognition, and integrative learning recommended in both bodies of scholarship. The article includes quantitative and qualitative analyses of student success in hybrid courses that include Conversations, with the results suggesting ePortfolio use can intensify the development of historical thinking.

Scant ePortfolio scholarship has focused specifically on the discipline of history, but the scholarship of teaching and learning (SoTL) history dovetails closely with the scholarship on and philosophy of ePortfolio. Both stress the importance of moving away from memorization and rote repetition to focus on active learning, reflection, and analysis. At Bronx Community College (BCC), part of the City University of New York, history faculty have integrated ePortfolios into their classes, recognizing that they help students achieve the learning outcomes laid out by the college, the university, and the professors themselves, in terms of gaining historical knowledge, academic skills, and a sense of an identity as college students. This article focuses on how two BCC professors use Digication's Conversations feature to help students develop their ability to analyze historical documents and understand historical arguments, strengthening their analytical skills in the process. Their experience suggests the benefit of understanding ePortfolio scholarship not in a vacuum, but in relation to the SoTL within the disciplines. This pedagogically-sound integrated approach also has proven effective in addressing the practical realities faced by students at an intercity community college. This connection helps answer the call issued in the 2015 Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL) keynote address, "Back to the Future: ePortfolio Pedagogy Yesterday, Today, and Tomorrow" by Helen Chen, Gary Brown, Ashley Kehoe, and Kathryn Colman, which encouraged the ePortfolio community to look "outward to explore the connections to evidence-related conversations occurring beyond AAEEBL" (para. 1).

Correlations Between ePortfolio Scholarship and SoTL of History

While not always using the same terminology and written largely in isolation from one another, the scholarship of ePortfolio pedagogy and that of teaching and learning history both emphasize the importance of high impact practices including active learning and reflection, as well as metacognition and integrative learning. Much of the scholarship on ePortfolio stems from George Kuh's concept of *high impact practices*, which stresses the importance of active learning and recognizes that much of the deepest learning takes place outside the traditional lecture-based classroom (Huburt, Pickavance, & Hyberger, 2015). ePortfolios also promote metacognition—a student's thinking about his or her own thinking and learning—as they allow students to document and reflect on their learning process. As Boesch, Reynolds, and Patton (2016) explained, "ePortfolios can be a rich tool for aiding students in the development of metacognitive skills. In fact, the process of creating an ePortfolio is indeed a metaphor for metacognition. That is what it is all about" (p. 456). ePortfolios also promote integrative learning, the ability of students to make connections among their classes and between their school work and their lives beyond the classroom, which can lead to greater student engagement and understanding of—and commitment to—their learning process. Eynon, Gambino, and Török (2014) have argued, for instance, that "the value of ePortfolio experience emerges from the ways it makes learning visible, facilitating connective reflection, sharing, and deeper, more integrative learning" (p. 98).

Much of the research in history pedagogy indicates student success, in terms of developing critical thinking skills and historical knowledge, as well as student engagement, improves when faculty move away from traditional lectures and assessments based on repetition of facts to an emphasis on developing historical thinking. This approach encourages students to understand history as a contested interpretation of facts and develop their own questions and arguments based on the analysis of primary and secondary sources (Calder 2006; Otremba 2014; Sipress & Voelker 2011; Wineburg 2001). The path to historical thinking

includes active learning, reflection, and, though rarely named as such in the literature, encouraging metacognitive and integrative learning. The analysis of documents, individually and in groups, incorporates active learning. Students' reflection on the analytical process through which they develop their own historical questions and understanding of the bias inherent in that process promotes metacognitive learning, which is critical to helping students learn to think historically (Frederick, 1993; Pace, 1993). Students' reflections on the relationship between the past and their lives, families, and communities—a type of integrative learning—often improves student engagement (Bischof, 2015; Lyons, 2007). At a deeper level, learning historical thinking also promotes the forming of metacognitive analytical skills that encourage students to connect academic learning to the prospects and demands of their lives, leading them to the discovery and development of problem solving and decision-making processes adaptable to the ever changing realities of their lives (Sternberg, 1985, 2012).

Bass (2012) has argued that "ePortfolios can be powerful environments that facilitate or intensify the effect of high-impact practices" (p. 30). Similarly, our experience, along with the small body of scholarship on ePortfolio in history courses, suggests that ePortfolio use can facilitate or intensify the reflection, metacognition, and integrative learning that is a critical step in developing the ability to analyze sources, ask historical questions, and craft arguments, as students move past the idea that history means only memorizing and repeating facts. The assistance ePortfolio provides is important, as this analytical progression challenges many students. As Calder (2006) explained, "questioning is an extraordinarily difficult skill for most students, probably because for their whole lives teachers and textbooks have posed the questions for them" (p. 1364). Penny Light (2005) documented her use of ePortfolio in her history classes in an early Making Connections report, noting that "the ePortfolio helps students to develop and demonstrate competencies for 'doing history' (critical thinking and analysis) over the course of the semester" (para. 2). More recently, Jordine (2015) analyzed her experience using ePortfolio for students to create exhibits about the Holocaust, noting that ePortfolio fit well with her commitment to integrative learning and a student-centered focus. Jordine concluded, "the degree to which students had to engage actively in thinking while creating their exhibit was definitely much greater than in previous semesters," adding that "the project required students to acquire or improve their integrated learning skills, and their level of proficiency could be measured by evaluating their final exhibit in ePortfolio" (p. 20). Bass and Eynon (2009) examined the Visible Knowledge Project (VKP), which from 2000 through 2005 supported research by history and cultural studies faculty into the

use of Web 2.0 technologies in teaching and learning. While the project was not specifically focused on ePortfolio, Bass and Eynon noted that the VKP projects indicated the importance of embodied and socially situated learning, adding that ePortfolios combined both of these powerful elements. So, while history faculty can, of course, introduce active learning, reflection, metacognition, and integrative learning into their courses without ePortfolios, the increased visibility and the sense of authorship and ownership ePortfolios provide can be powerful tools in the history professors' difficult but important job of introducing and developing historical thinking.

BCC Demographics

While our analysis of the integration of ePortfolios in history courses is relevant to a wide spectrum of academic environments, a desire to improve retention and passing rates and develop students' academic skills in the challenging environment of BCC has driven professors' adoption of ePortfolio. The school serves a student body that is motivated and intelligent, but often underprepared, both academically and in terms of college skills like studying and time management. Approximately 90% of BCC first semester students fail to place at the college level in at least one of the required reading, writing, or math assessment tests given to all incoming CUNY students, and a quarter fail all three. Of the students who entered in 2010, only 23% had earned an Associate degree by 2015 (although that number does not include students who transferred). Of the students who entered in Fall 2014, only 58% were still enrolled the following year (CUNY Office of Institutional Research, 2016). History, a reading and writing-intensive discipline, has posed a particular challenge to students at BCC, with average pass rates for the core courses sinking below 60% some semesters. A desire to address these troubling statistics has shaped the evolution of the BCC ePortfolio Program generally, and the use of ePortfolio in history courses specifically.

ePortfolio at BCC

While historians often have a reputation for resisting both pedagogical scholarship and technological innovations, History Department faculty members at BCC have led the campus in introducing technology into the classroom. In 2003, Howard Wach, then in the BCC History Department, designed the school's first online teaching training seminar. In 2009, Wach joined with Jordi Getman-Eraso, also in the History Department, to create the BCC ePortfolio Program, which Getman-Eraso currently coordinates. As of May 2016, 4,111 currently enrolled students have

ePortfolio accounts, and since the program's inception, 2,564 BCC graduates used ePortfolios in at least one class. In addition, 284 faculty and staff have ePortfolio accounts. To date, 14,248 ePortfolios have been created, 13,055 by students and 1,193 by faculty.

As with the school's approach to online teaching, the ePortfolio Program stresses introducing technology not as an end in itself, but as a tool to be used in the service of integrating larger learning objectives (Wach, 2007; Wach, Broughton, & Powers, 2011). Faculty development opportunities encourage professors to employ ePortfolios in ways that help students comprehend connections between their personal and academic lives and their work at BCC and their future professional selves. The overarching goal is to engage students in reflective metacognitive learning that develops a strong sense of authorship and ownership over their work, empowering them to become self-directed learners. While encouraging these broader pedagogical aims, faculty also design ePortfolio assignments specific to the academic disciplines they teach. The parallel integration of disciplinary thought and ePortfolio learning pedagogies have allowed BCC faculty to use ePortfolios in ways that encourage student engagement and deep learning, while introducing students to threshold concepts for their disciplines (Meyer & Land, 2005).

Data collected through BCC's Office of Institutional Research and Planning suggests ePortfolios have had a significant effect on student success and retention. In the Fall 2015 semester, students in ePortfolio classes passed at 81%, as opposed to 72% of students in non-ePortfolio sections; 85% enrolled for the following semester, as opposed to 76% in the non-ePortfolio sections (BCC Office of Institutional Research). ePortfolio, as a vehicle for integrative learning, has also been an important part of the successful implementation of BCC's First Year Seminar, introduced in 2012 (Karp, Raufman, Efthimiou, & Ritze, 2015). Of course, correlation does not equal causation, and there may be other factors at work in these courses, including that faculty who find meaningful uses for ePortfolios may be more interested in exploring effective pedagogies. Still, these results track with the cautious optimism that Eynon et al. (2014) cited on the campuses involved with the Connect to Learning ePortfolio initiative, particularly at community colleges, and provided incentive to continue to develop the program and go forward with further study of its effectiveness.

The History Department has been at the forefront of the school's implementation of ePortfolios and the integration of ePortfolios into online and hybrid classes. Ten of fifteen full-time department members have participated in the BCC ePortfolio Program's two-semester faculty development seminar designed to develop the pedagogical strategies to successfully integrate ePortfolios into their courses. The initial decision to integrate ePortfolios was driven at least in part by the traditionally low passing rates in history courses at BCC. The integration of ePortfolios into history courses were part of a larger sea-change in the department, moving away from traditional history teaching approaches that focused on coverage of a wide swath of historical time, lectures, and tests based on memorization of facts, toward student learning-centered pedagogical approaches that underline the development of metacognitive critical thinking skills and a deeper understanding of the epistemological foundations of the discipline of history.

History faculty incorporate ePortfolios in a variety of ways, including having students create local history projects, online exhibits, and primary source collections. The department has also used ePortfolios in the creation of open educational resources, such as primary source readers that aim to not only save students money but also allow for a targeted collection of resources specifically tailored to course student learning objectives. There is a commitment to having students reflect on their own learning, particularly in terms of their growing awareness of how history is written, their own historical arguments, how historical events influence their lives, and their place in the world. This transformation in pedagogical approach has over the last three years led to significant improvements in pass rates for HIS 10, the Modern World History survey (up from 56% to 67%) and bumped up the pass rates for HIS 20, The American Nation (up from 68% to 74%), even as HIS 10 was removed as a prerequisite due to CUNY-wide curricular changes.

Conversations

Digication introduced the Conversations feature in beta form in 2013. It allows users to highlight text directly on any ePortfolio page and comment on it, and other members of the ePortfolio community to respond to the comments, thereby engaging in an online "conversation" about the text. It was designed to encourage collaboration and social engagement, as well as to allow professors to comment on student work. While not developed specifically with history classes in mind, the group analysis the feature makes possible fits remarkably well with recommendations from the scholarship of teaching and learning history, including the importance of active learning and document analysis as critical steps to developing historical thinking (Booth & Hyland, 2000; Wineburg, 2001; Grim, Pace, & Shopkow, 2004).

Getman-Eraso and Culkin an Associate Professor of History who was part of the first ePortfolio faculty development seminar, have made the Conversations

feature a critical element of document analysis in their hybrid courses since it was introduced in 2013. Getman-Eraso used the feature in Modern World History (HIS 10) and Culkin used it in The American Nation (HIS 20). While teaching different courses and with some differences in implementation, Getman-Eraso and Culkin both considered document analysis the foundation of history education, a way to introduce historical thinking, encourage student participation, and develop critical thinking skills. Given their emphasis on student engagement and participation, both wanted to find ways to replicate the "interactivity of the physical classroom in an online environment" (Stern, 2015, p. 485). Each found the discussion boards in Blackboard frustrating as a way to introduce and measure student participation, as that forum does not encourage deep analysis of the document and conversation in the same way a face-to-face conversation does. Students will often identify a specific quote from a document, and discuss it intelligently, but the technology's focus on individual posts obscures a sense of the larger document and the larger conversation.

The Conversations interface comes much closer to replicating the face-to-face experience of group work, and, in some ways, improves on the in-class experience. All students must participate in order to earn credit, and students who are uncomfortable speaking in the physical classroom are able to contribute to the discussion in a way that may be less stressful and more productive for them. The conversation assignment thus fits well with Bass and Elmendorf's (2012) definition of social pedagogies "as design approaches for teaching and learning that engage students in authentic tasks that are communication-intensive, where the representation of knowledge for an authentic audience is absolutely central to the construction of knowledge in a course." This type of social pedagogy is one of the keys Eynon et al. (2014) identify as "improving student learning, engagement, and success" (p. 104) through ePortfolio.

Getman-Eraso first integrated Conversations into his HIS 10 hybrid course in Fall 2013, soon after Digication introduced the feature in beta form. Impressed with student work in Getman-Eraso's class, Culkin incorporated it into the first hybrid class she taught the following semester. Getman-Eraso and Culkin used Conversations in similar ways. Each week students together analyze a primary document relevant to the topic covered and material addressed in the face-to-face session by highlighting and commenting on a section of text they consider relevant. They read and could then respond to other students' posted comments, thereby engaging in an analytic conversation about the primary source, the author's intended meaning(s), and its larger historical significance. Unlike discussion boards in learning management systems, with Conversations the selected text, all comments, and responses are visible at the same time on the same page, next to the original document text, making the experience more intuitive and aesthetically logical. It facilitates drawing analytic connections and establishing a historical context not only between separate highlighted sections of text, but with the larger document as a whole. This "crucial bottleneck of learning" (Grim et al., 2004, p. 57) encourages students to become active participants in the identification and deployment of evidence as part of the evaluation of and engagement with larger historical narratives. In so doing, students collaboratively contribute to the historical analysis of the source, empowering them to gain confidence and a sense of interpretative authority. In a very real sense, they become historians. As Getman-Eraso wrote in the instructions for the assignment,

> Each week you will engage in collective analysis of primary documents, the center piece of historical interpretation. This is important not only for those wanting to become professional historians, but for anyone wanting to better understand not only our historical background, but, perhaps more importantly, the use of words to influence how we think as individuals and as a society. (Getman-Eraso, 2015, para. 1)

In Getman-Eraso's classes, the primary source analysis is an integral step of a weekly four-step scaffolded learning process aimed at replicating the epistemological approach used by historians. Short introductory online lectures and textbook readings contextualizing the historical period and the major debates of the time preface the tackling of the primary source analysis using Conversations. The collaborative peer-to-peer interpretations of the primary source are intended to contribute a deeper comprehension of the author's intentions and use of language to influence those debates. Faculty contributions are limited to directing students to higher level questions of historical analysis. Students then individually write a reflective essay using the lessons learned from the group text analysis to cogently address that topic's larger debates. The resulting essays reflect a more mature understanding of the historical debates and encourage a deeper personal engagement with the history the students are learning, helping them gain a place and sense of responsibility in the globalized world in which they live. The weekly essays build up to a final project that requires students to define critically the concept of globalization, both historically and in present-day society, and asks them to identify their place in a globalized society.

Table 1
HIS 10 Rubric: SLO: Identify and Apply the Fundamental Concepts and Methods of the Discipline of History

		Exceeds standard	Meets standard	Approaches standard	Does not meet standard
A.	Historical sources	Uses and critiques sources from a variety of perspectives to analyze the causes and consequences of historical events.	Uses historical sources from a variety of perspectives to analyze the causes of historical events.	Recognizes historical sources, but establishes weak and/or inaccurate connections to the causes of historical events.	Cannot identify historical sources and/or their relationships to historical events.
B.	Historical themes, ideas and movements	Studies the relationships between events to identify pervasive historical themes, ideas, and/or movements.	Identifies pervasive historical themes, ideas, and/or movements.	Identifies some historical themes, ideas, and/or movements.	Does not identify historical themes, ideas, and/or movements.

While Getman-Eraso focuses on global citizenship, in her HIS 20 course Culkin focuses on the theme "history is more than a textbook," encouraging students to understand that history is an interpretation of events, not a repetition of facts. Throughout the semester, students analyze the ways in which historical actors use events in American history, such as the Revolutionary War, to support vastly different positions at different times. In addition to the Conversations, students write weekly response papers, reflections at the beginning, middle, and end of the semester, and take-home essays for the midterm and finals exams. The midterm and final exams require students to develop an argument about how the authors of three primary documents use American history to support their points. The final exam question is:

> Write an essay in which you develop a thesis to answer the following question: How do Franklin D. Roosevelt, in his 1st inauguration speech, Ronald Reagan, in his 2nd inauguration speech, and Barack Obama, in his 2nd inauguration speech, use American history and American ideals, such as freedom, liberty, and rights, to support their vision of what direction they want to take the country and what they want to accomplish during their administration. Support your thesis with evidence from the text and your analysis of that evidence. (Culkin, 2016, para. 2)

Learning Outcomes Assessment

In assessing the Conversations assignments, the authors looked at not just passing and retention rates, but the development of critical thinking skills and comprehension of the discipline of history over the course of the semester, as measured through an evaluation of the Conversations-based document analysis at the beginning, middle, and end of the semester. In addition, both authors assessed larger related assignments completed at the middle and end of the semester to see how students were able to apply the skills and knowledge they gained from using Conversations in a broader, more contextual dimension. For the assessment, the authors utilized a rubric adopted by the History Department in Fall 2015 semester for department-wide assessment of HIS 10, the core history course that all Liberal Arts majors are required to take at BCC (Table 1). The department designed the rubric to assess the larger student learning outcome (SLO) "Identify and apply the fundamental concepts and methods of the discipline of history," which the faculty articulated for HIS 10 as part of a CUNY-wide curriculum reform. The rubric for the SLO includes two evaluative sub-outcomes. The first assesses students' ability to use and analyze historical sources (sub-outcome A), and the second, their ability to demonstrate an understanding of historical events, ideas, and movements (sub-outcome B). While HIS 20 does not yet use the specific rubric, the student learning outcome and criteria fit well with Culkin's learning outcomes for the course, as well as the general HIS 20 learning outcomes.

Norming for each of the sub-outcomes measured with the rubric was carried out prior to the assessment and included a discussion about the expected standards for each assignment, as well as for the overall course. The process was facilitated by the similitude in both authors' approach and expectations for the Conversations assignments. Even so, an attempt was made to parallel as

Figure 1
HIS 10 Sub-Outcome A: Historical Sources
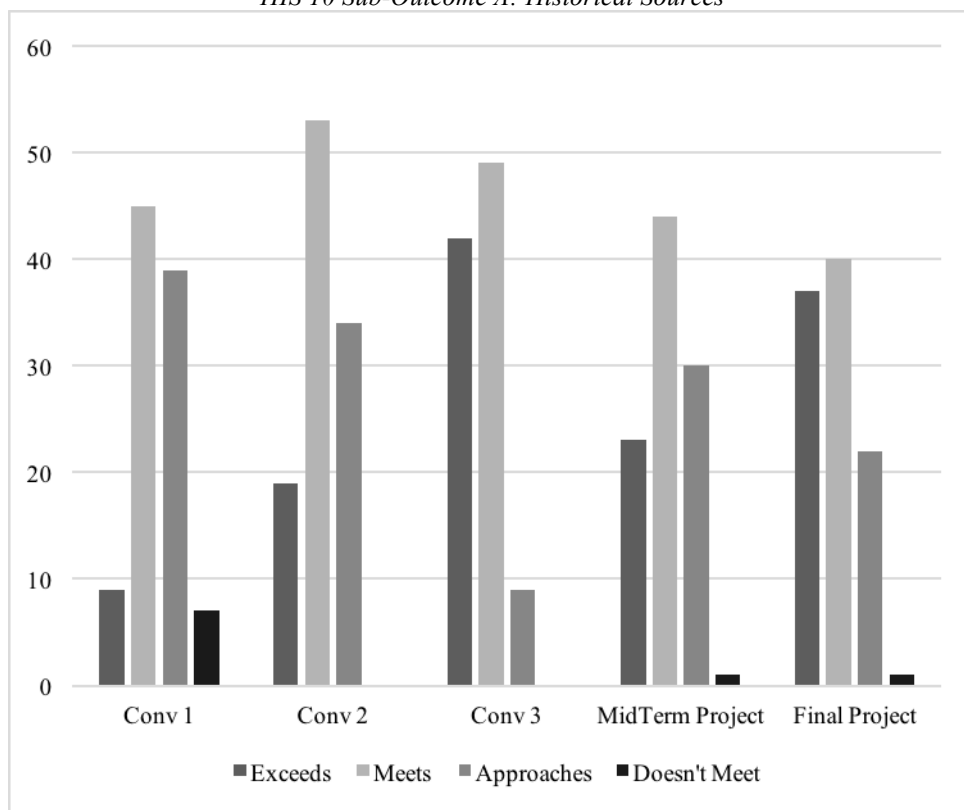
closely as possible the norming carried out for department-wide course assessments of both HIS 10 and HIS 20. What proved somewhat more difficult was the norming for the evaluation of midterm and final projects, as they varied more significantly in form between the HIS 10 and HIS 20 courses. That said, the use of the same rubric and sub-outcomes for these extender assignments mostly kept the authors' evaluative variance to within one step on the standards scale.

Assessment Results

HIS 10

The assessment of Getman-Eraso's HIS 10 included four sections from Fall 2013 to Spring 2015, with a total of 95 students. The evaluation of student learning sub-outcomes A and B in the HIS 10 primary-source analysis Conversations showed a marked progression toward analytical mastery for a large majority of students. See Figures 1 and 2 for data related to sub-outcomes A and B, respectively in HIS 10. For sub-outcome A analysis of primary source), the percentage of students meeting or exceeding the standard increased from 54% of students on the first conversation at the beginning of the semester

(45% met, 9% exceeded) to 91% on the third and last conversation at the end of the semester (49% met, 42% exceeded). For sub-outcome B (application to historical themes, ideas, and movements), the trend was similar. On the first conversation, 49% of students met or exceeded the standard (41% met, 8% exceeded) and on the third and last conversation, 93% met or exceeded the standard (48% met, 45% exceeded). The increase from the first to the third conversation in the percentage of students meeting the standard was positive, but not significant (4% and 7% increase for sub-outcomes A and B, respectively). There was, however, a significant increase in both outcomes of students exceeding the standard (33% and 37% increase for sub-outcomes A and B, respectively), which is diametrically opposed to the decrease of students approaching the standard (30% and 37% decrease for sub-outcomes A and B, respectively).

The impact on the midterm and final projects showed a similar, though not as pronounced positive progression. For sub-outcome A, there was an increase of 10% (67% to 77%) of students meeting or exceeding the standard. Sub-outcome B showed a moderately higher increase of 14% (62% to 76%), perhaps related to the broader thematic learning objectives of the final project on globalization.

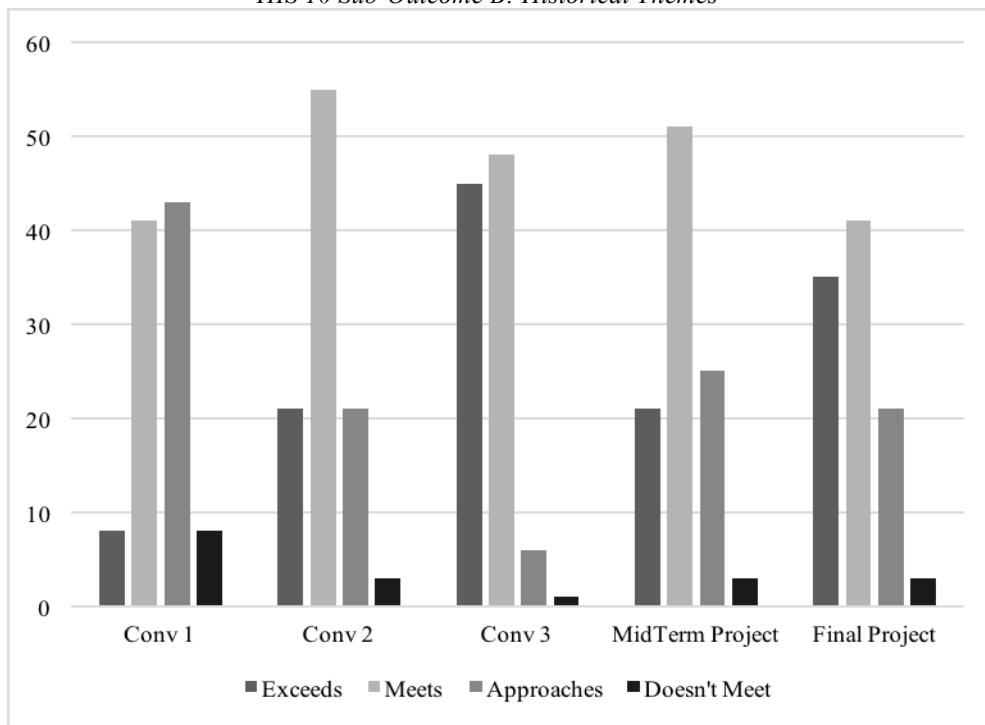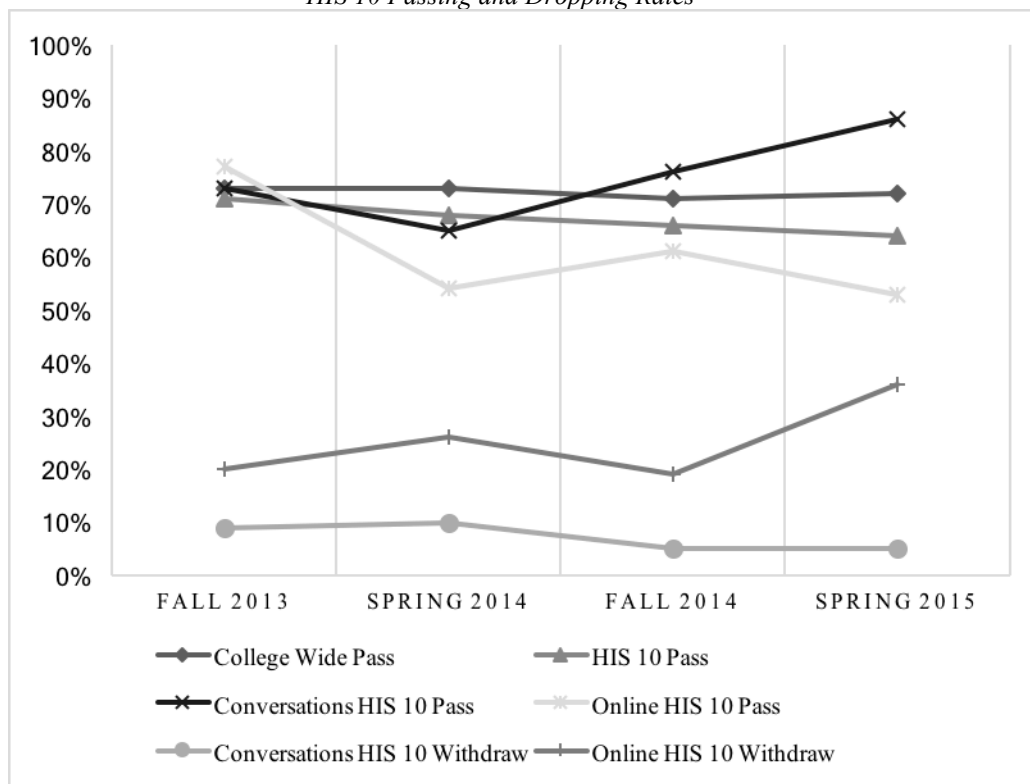Figure 2
HIS 10 Sub-Outcome B: Historical Themes

Figure 3
HIS 10 Passing and Dropping Rates

The dramatic increase in student learning was also reflected in the passing and retention rates (Figure 3). The Conversations-integrated HIS 10 courses evidenced an increase from 73% to 86% passing in the four semesters between Fall 2013 and Spring 2015. In the same period, the departmental passing rate for HIS 10 decreased from 71% to 64%. More significant was the comparison with other online courses (hybrid and asynchronous), which declined from 77% to 53% passing.

The trend continued when looking at retention rates (Figure 3). The Conversations-integrated HIS 10 courses saw a decline in drop rates, from 9% to 6%, while drop rates in other online HIS 10 courses increased from 20% to 36%. It seems logical to draw a connection between the student engagement and growing sense of proficiency encouraged by the weekly conversations and the higher passing and lower drop rates.

Although the assessment results for HIS 10 proved quite satisfactory, there was room for improvement in specific areas. The prompting used to introduce students to the concept of online textual analysis was somewhat unclear, leading to some student frustration with not only using a new technology, but also the assignments' basic concepts and expectations. This issue was addressed by editing the prompts to include more detailed and logical instructions on the use of the Conversations feature in Digication and by adding examples (with accompanying screenshots) of model analytical comments. Even though not yet assessed quantitatively, the prompting change has positively affected the student on-boarding period for the use of Conversations.

Perhaps more important of an issue was students' ability to connect conceptually the course's low-stakes and high-stakes assignments, limiting the broader applicability of the analytical approaches developed by the Conversations assignments. This has led to the development of more clearly identified conceptual threads linking reflective thinking used in the low-stakes Conversations primary-source assignments with the bigger picture thinking expected in the midterm and final projects.

HIS 20

The assessment of HIS 20 encompassed three sections, one in each semester from Spring 2014 to Spring 2015, which enrolled a combination of 58 students. The data from the Conversations assignments indicates that students developed their ability to analyze documents and understand historical events. See Figures 4 and 5 for data related to sub-outcomes A and B, respectively in HIS 20. In the earliest conversation, 66% of students met or exceeded the standard for sub-outcome A (and 72% met or exceeded the standard for sub-outcome B. At mid-semester, these numbers inched up: 75% were meeting or exceeding the standard for sub-outcome A, and 80% met or exceeded the standard for sub-

outcome B. At the end of the semester, 90% met or exceeded the standard for sub-outcome A, and 70% met or exceeded the standard for sub-outcome B. And in the second half of the semester, there was a significant movement from meeting to exceeding the standard, suggesting that students' capacity for deep thinking expanded; from the mid-semester to the final Conversation, the exceeding standard for sub-outcome A jumped from 9% to 34% and for sub-outcome B from 8% to 34%.

The numbers for the final exam were not as promising, but they indicated progress. The final essay asked students to apply the analytical skills they had developed through the Conversations. Students often stumble when moving from a low-stakes writing assignment, such as the Conversations, to more formal, higher stakes assignment, such as the exam essay. This difficulty was indicated in the assessment, as only 60% met or exceeded the standard for sub-outcome A, and 61% met or exceeded the standard for sub-outcome B, significantly lower than student performance on the end-of-the semester conversation. That said, the final represented progress compared to the midterm, which required students to write a similar essay. Even though they could turn in a draft for feedback before turning in the midterm, which was not an option for the final, student performance improved in the majority of the categories between the two exams. Students struggled more with sub-outcome B, their ability to demonstrate an understanding of historical events, ideas and movements, in these high-stake writing assignments, with the number exceeding the standard falling from 22% to 13% between the midterm and final.

To address the differences between the assessment results of the Conversations and the exams, Culkin plans to develop activities that draw on the scholarship of Writing Across the Curriculum in community colleges and history courses to help students apply the skills and ways of thinking they develop in the primary source analysis to formal essays (Akkaraju, 2015; Elbow & Sorcinelli, 2005; Murphree, 2014; Quintana & Zajkowski, 2014). These activities will include low-stakes ePortfolio posts that ask students to reflect on what they have learned from the document analysis about using evidence to support an essay thesis before the midterm and the final. Culkin will also have students brainstorm about the evidence in the documents used in the exams, through in-class writing and small group discussions, early in the essay process. These steps may make more visible to the students the relationship between the different kinds of assignments and help them apply the high-level thinking done in the document analysis to the high-stakes essay writing.

As with HIS 10, student passing rates were notably higher in the Conversations-integrated HIS 20 sections when compared with other HIS 20 online sections

Figure 4
HIS 20 Sub-Outcome A: Historical Sources
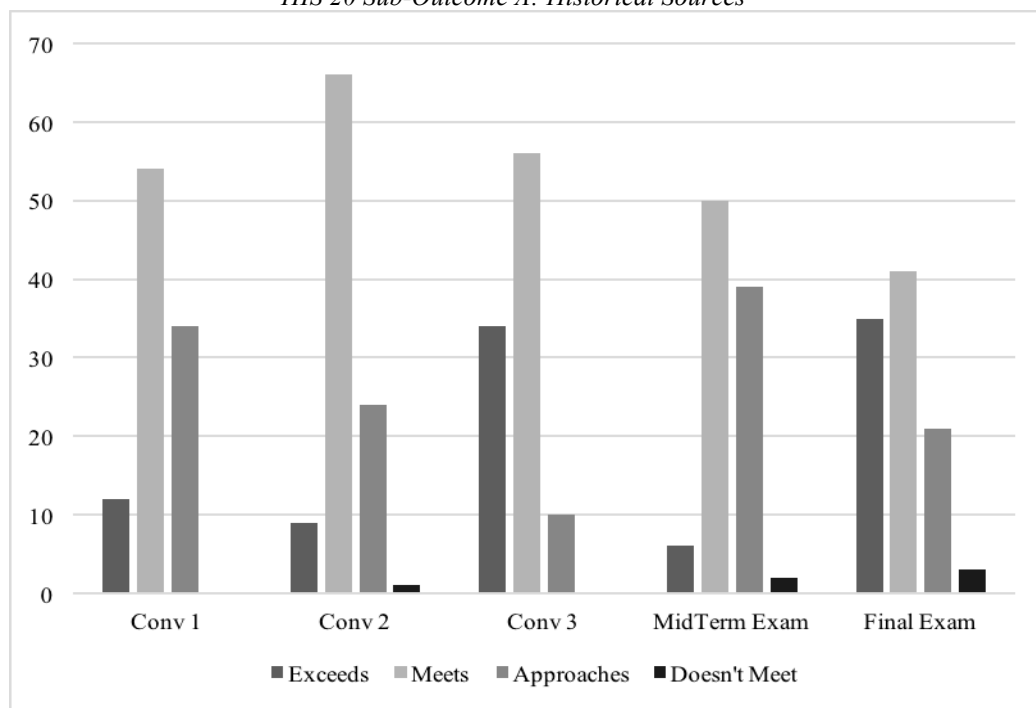
Figure 5
HIS 20 Sub-Outcome B: Historical Themes
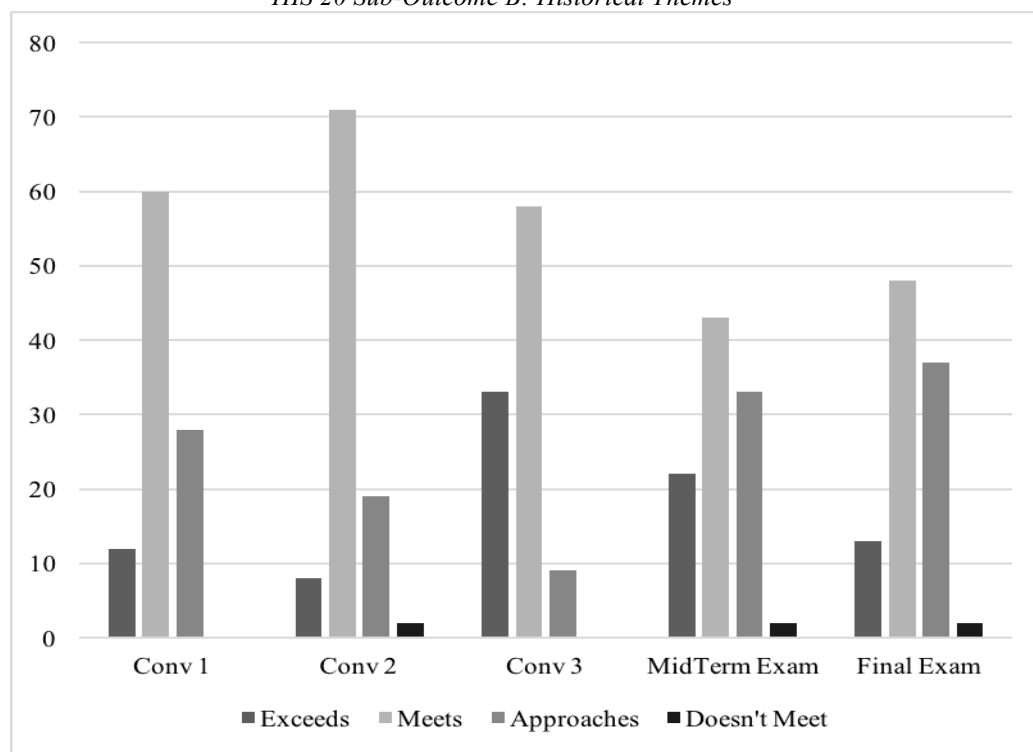
Figure 6
HIS 20 Passing and Withdrawal Rates
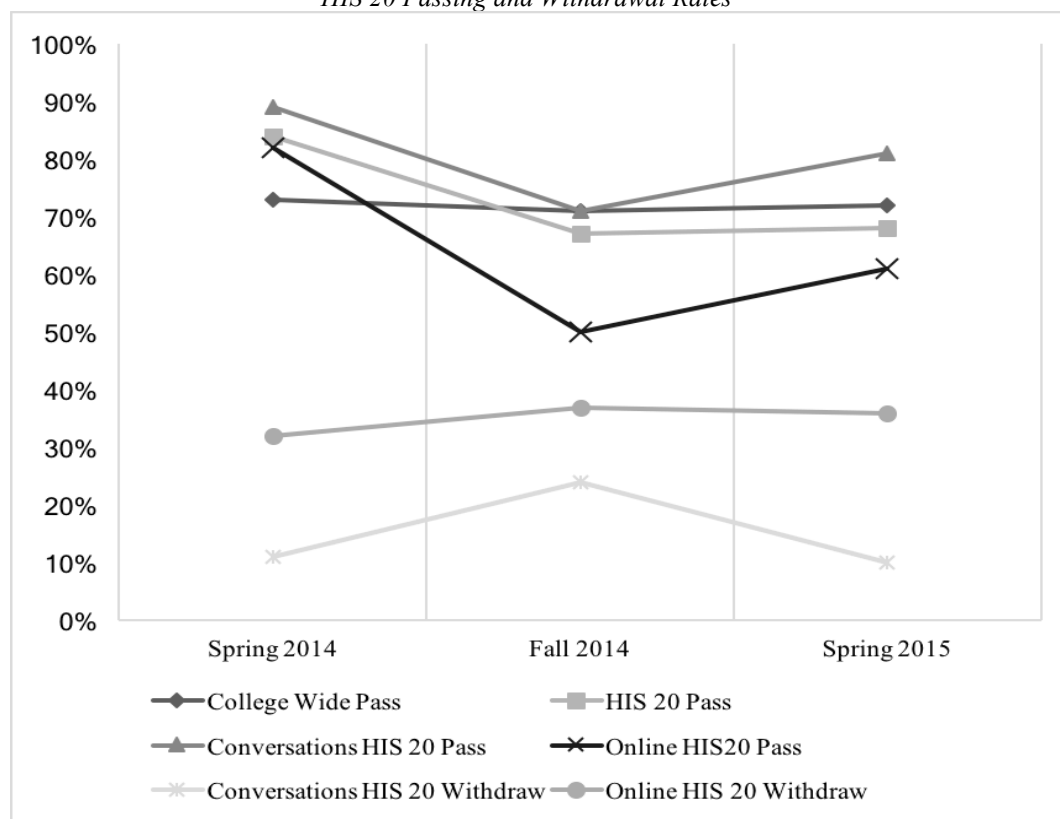
offered at BCC (Figure 6). All HIS 20 rates dipped significantly in Fall 2014, as the full impact of the curricular changes that resulted in less-prepared students enrolling in the course was felt. However, Culkin's HIS 20 hybrid rates rebounded more dramatically the next semester, coming in at over 10% higher than other HIS 20 sections in Fall 2015 and almost 10% higher than general college passing rates.

In Students' Words

The assessment data tells part of the story, but the reflections both Getman-Eraso and Culkin have students write at the end of the semester illustrate students' engagement with the study of history and how it influences their sense of themselves as students and their place in the world. This type of reflection and engagement, of course, is at the heart of ePortfolio's potential. It may be particularly important at community colleges, where many students believe in the importance of a degree, but do not necessarily comprehend the importance of what they learn to earn that degree. As Bellafante (2014) wrote in a profile of professors at LaGuardia Community College, another CUNY school, "One

enormous challenge for community college instructors is that many students arrive with the notion that a college education is essential, but remain unconvinced that what they will learn during the course of their studies is equally so." The use of ePortfolios in history courses can help students understand the relationship between their own lives and historical events, which can be a powerful step in student engagement.

The applicability of the Modern World History course's (HIS 10) themes came across in students' end of semester reflections on their academic learning and its impact on their notions of the world in which they live. Student comments ranged from the practical (e.g., "Our weekly reading and writing assignments helped me to organize my thoughts in preparation for my final project") to the more affective; for instance,

The wonderful observations provided by my classmates has [*sic*] allowed me to move onward with my belief that there are no strict interpretations of good and evil, as heinous acts and atrocities have unfortunately been committed by almost every nation in the name of peace and prosperity, leading to conquest and anguish.

The notion of a cognitive shift was common among most students in the course. As one student noted, "class was 'an eye opening' and something I had missed in my life." The approach of the course and its break with traditional notions of instruction was in many students' thoughts:

My first day in the History 10 class my thoughts were that it was going to be a regular class; where the professor lectures, I memorize a little here and there, and then pass the class to move on to the next semester but it certainly did not happen that way. I did not expect that so much concentration and discipline were needed for a half on-line course. Now I come to realize that purpose of this intense course has been that students understand and interpret history fully.

The broader impact of the learning experience also surfaced. The comment "I think after this semester I have a deeper understanding of history, instead of it being about big names and big dates," is representative of many students' newfound understanding of the discipline of history.

Perhaps more significantly, many students were empowered by applying what they learned in the course to their notions of present-day society, established mores, and their ability to influence its future. In one student's words, "In this course I learned more than History. I learned tolerance, persistence, and respect; qualities that are much needed in the present days." Another one commented,

Taking a page out of what we learned in class I feel too many people in general have a culture of being raised to feel superior. History tells us that that's not a good idea to put yourself over anyone else and try to make them inferior . . . Instead of trying to be #1 people should try and learn how to work together. Be an individual but at the same time try to learn as much as you can from the next person so in turn that makes you a better people.

In Culkin's American History course, many students noted the power of learning about historic injustices and social justice movements, not surprising given the demographics of the school and the course's emphasis on these movements. One student wrote,

Being of African descent I also learnt the bitter truth of my ancestors' past and realized yes we did suffer, yes we are still suffering from racism, but as a people we have achieved a lot we went from being poorly taken cared of slaves to being doctors, lawyers, teachers, military personelle [sic], politicians and even a president . . . you have to see

it because of the fight, the struggle, the sweat, the tears that is what built America, honestly that is what built you.

Another noted,

Studying history for me definitely helped shape my understanding of history in today's world. Being a Puerto Rican male and openly gay has really inspired me to learn everything I can about history—that will better educate me on the constant struggle I have to go through.

As much of as the assessment statistics, students' ability and willingness to articulate a connection to the history they have studied indicates deep learning and a commitment to future interest in the discipline, both inside and outside of the classroom.

Final Thoughts

As educational environments become increasingly non-traditional, where more and more students find long-established teaching approaches antiquated, foreign, and, most notably, inaccessible, it is our responsibility as educators to develop intuitive, adaptable, and engaging models of learning that engage students in the context of the realities of the world in which they live. Rather than fall down the rabbit hole of labeling any innovative teaching approach as challenging disciplinary standards, a growing number of faculty who think creatively are realizing the educational advantages afforded by the multiple interfacing and aesthetic dimensions that can be integrated into the pedagogical adaptation of new technological tools. As has been often argued, technology in and of itself does not engender meaningful improvements in learning experiences. However, the alignment of the specific educational aims of academic disciplines with the functionality offered by software platforms has the potential to produce very positive learning outcomes.

The aim in redesigning the HIS 10 and 20 courses has been to integrate the pedagogical rethinking made possible by the advent of the new ePortfolio Conversations feature in Digication. The authors have sought to engage students with a pedagogical approach which blended active learning, reflection, and integrative learning in the hopes of helping them learn the "secrets of the trade" and become, in some dimension, historians, even if that is not their major (as is the case with a great majority of them). At a broader level, the authors aspire to empower students by developing their metacognitive learning skills, so that they can develop the interpretational aptitude necessary

to approach any conceptual obstacle, whether in the realm of academics or of their real world experiences.

While the authors have focused on the use of Conversations in history courses, close reading of texts is at the heart of most disciplines in the humanities and social sciences, which suggests that professors could integrate the technology into a range of courses. It is easy to imagine, for instance, an assignment structured around a collaborative analysis of a poem in an English course. The Conversations feature also holds promise to help students struggling with college-level reading. Melissa Cross, an English professor at BCC, has already adopted the technology. Before class, students read an assigned article and used the commenting feature to define words they do not know; they are then better prepared to discuss the work in class and reflect on their experience of reading the article on their ePortfolios. This type of assignment could work not only in the humanities, but any course that requires students to do intensive reading outside of class. While Digication's Conversations feature has made integrating textual analysis into class assignments wonderfully simple, professors could surely adopt other platforms for similar use. Google Docs, for instance, allows for multiple people to insert in-line comments on the same document, and teachers have begun to adopt it in their courses, for collaborative writing and peer review, as well document analysis (Edwards, 2011; Moran, 2010).

The assessment of HIS 10 and HIS 20 student learning outcomes showed a significant increase in discipline specific analytical skills, not only in the weekly interpretation of primary sources, but also in larger assignments which integrated said analytical skills. Statistically, students in both courses demonstrated a notable increase in their ability to read closely primary source documents, identifying and interpreting the use of specific language, its intended meaning, and its impact on the events of the historical moment. The peer-sharing nature of the Conversations interface contributes an added sense of visibility, audience and social dimension to the students' analytical comments, something that would not be possible in a traditional two-way exchange with a faculty member or even in a physical classroom. In addition, the interpretative skills students acquire from analyzing primary sources through group conversations impacts positively their ability to develop thoughtful and reasonable arguments in larger high stakes essay assignments that require broader contextual thinking. The statistical numbers are supported by student reflections, which indicate an intellectual awakening for many students, a crossing of an interpretative threshold of their notions of the discipline of history, its epistemological functions and its broader real life application.

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Navigating Multiple ePortfolios: Lessons Learned
From a Capstone Seminar

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ePortfolios are a growing trend in higher education, implemented by an increasing number of curricular and co-curricular programs. Given the de-centralized nature of many colleges and universities, it is inevitable that faculty requiring ePortfolios, especially as capstone experiences, will engage with students who have completed one or more ePortfolios, alongside others for whom this will be a new experience. Drawing on twelve sections of a senior capstone over two academic years (2014-2016) that included ePortfolios by over two-hundred students, we present a case study of our learning and pose five strategies to help faculty and students navigate across multiple ePortfolios.

ePortfolio engagement is a growing trend in higher education, implemented by an increasing number of curricular and co-curricular programs. As of 2013, more than 50% of U.S. colleges and universities now offer some form of ePortfolio experience (Dahlstrom, Walker, & Dzuiban, 2013). For example, in our own institution, a major public university in the Midwest, a recent campus snapshot identifies over 4,500 ePortfolio creators in 15 schools and colleges on at least 10 distinct platforms (Luke, 2013). According to this review of the campus, there is a wide variation in terms of quality, content, and approach. The growth and adaptation of ePortfolios is not surprising, given the range of scholarship that demonstrates the importance of ePortfolios as critical tools for reflection and for integration of learning across settings (e.g., Clark & Enyon, 2009; Enyon, Gambino, & Török, 2014; Peet et. al., 2011; Ring & Ramirez, 2012).

Considering the widespread adoption of ePortfolios in campus programs, however, it is only inevitable that students are exposed to multiple ePortfolio experiences during their time on campus. While in some cases, ePortfolios are uniquely created for a specific experience or program, redundancy can create tension and frustration for students. Thus, as ePortfolios continue to emerge and proliferate, strategies are needed within classrooms and co-curricular programs to help students navigate across multiple ePortfolios. To date, there is little evidence of strategies that support instructor and student navigation of multiple ePortfolios, strengthen meta-reflection across experiences, and disrupt repetitive, "not this again," learning environments.

In this teaching note, we showcase lessons learned working with and across multiple ePortfolios that emerged within a capstone class. Drawing on 12 sections of a senior capstone over two academic years (2014-2016) that included ePortfolios by over 200 students, we present a case study of our learning and develop concepts for discussion amongst scholars of ePortfolios. Although not all of the students came in with multiple ePortfolios, over 30% of the students did;

and thus, as instructors, we were navigating between students with multiple exposures and students with no exposures to ePortfolios while trying to create a capstone that engaged all students in reflection about their experiences in a social justice minor. This paper explores the instructional strategies we used to navigate multiple ePortfolios, using student quotes from ePortfolios and final reflections to illustrate our learnings. Our strategies reflect emerging best practices within the literature, and our intent is to share how we have employed these strategies in dealing with our capstone course (Buyarski & Landis, 2014; De Santis & Serafini, 2015; Enyon, et. al, 2014; Nguyen, 2013).

ePortfolios in a Social Justice Minor

Since 2010, the School of Social Work at our University has offered an interdisciplinary undergraduate minor in community action and social change. The minor draws on an interdisciplinary set of courses to help students develop the skills for action and change-orientated engagement in creating a more just and equitable society. The goals of the minor are to provide undergraduate students with opportunities to: (a) examine community action and social change concepts using a multidisciplinary framework; (b) address community action and social change efforts in multilingual and multicultural communities; (c) integrate, using a multidisciplinary framework, social justice values into the community action and social change processes; and (d) engage in service-learning opportunities to promote community action or social change initiatives.

To date, the minor has attracted hundreds of students who are interested in exploring community change. Students in the minor are required to take classes that expose them to the context of community change, the skills for working in diverse settings, and engagement in actual community change work. In addition, all students take a foundation class and a capstone course (for more information about the minor,

see Richards-Schuster, Ruffolo, & Nicoll, 2015). In the 2015-2016 school year, the minor included almost 300 students studying over 50 majors and representing eight schools and colleges within the University.

The capstone is a one-credit course taken during the student's final year. Ideally, the students take the course after all other minor requirements are completed and in their final semester before graduation. The goal of the course is to provide the space for students to reflect on their experiences in the minor and in social justice activities, articulate their values and skills, build relationships with others graduating from the minor, and help position students for the post-graduation experience. Although the course uses the ePortfolio as the main product for the class, the class also involves whole group discussions and reflection-type activities, with the emphasis less on the technology and more on the ePortfolio as a the framework for integrative learning.

An earlier paper (Richards-Schuster, Ruffolo, Nicoll, Distelrath, & Galura, 2014) reviewed 50 ePortfolios from the first two years of the minor and conducted a thematic analysis to explore student understanding about civic engagement learning. Our research indicated that students did develop an understanding of civic engagement and showcased the potential of ePortfolios for civic engagement learning assessment. This research is consistent with other scholarship that has discussed the importance of ePortfolios for assessing service learning, personal learning, critical reflection, and community engagement (Cambridge, 2010; De Santis & Serafini, 2015; Reynolds & Patton, 2015).

While the early years showed promise for student interest in the ePortfolio process, some challenges emerged as more students enrolled in the capstone course with prior exposure to ePortfolios. Instead of a enjoying a space for reflection and engagement, students became frustrated with the class, seeing it as a redundant experience with other ePortfolios they had done elsewhere or not recognizing the value of the ePortfolio process—and the role of critical reflection—for their future work as social justice activists. End of semester class ratings were low. In 2013, student ratings for the item, "Overall, this was an excellent class," were 3.75 on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). This was at or below the lowest quartile University-wide that semester. In addition, students' frustration had an impact on their overall experience in the undergraduate minor program. For example, written reflections at the end of the semester described the course as "pointless," and one student even considered dropping the minor due to their experience in the capstone course.

There was a critical need to redesign the capstone not only to navigate the multiple ePortfolios but also to help students link their experience with ePortfolios to reflection as a lifelong value. We needed to move from the "not again" understanding of ePortfolios to an approach that acknowledged, appreciated, and valued the role of reflection and ePortfolios as an ongoing process. To do this, we redesigned the course to provide students with creative and innovative approaches to navigate the multiple ePortfolio process.

Exploring Instructional Strategies for Navigating Multiple ePortfolios

This section shares five key strategies: (1) redevelop the curriculum to meet student needs, (2) acknowledge the confusion and frustration of students, (3) encourage students to include the whole of their experience—academic and co-curricular, (4) use the ePortfolio process as a tool for promoting "possible selves," and (5) use the capstone class to build community and networks for the students. To illustrate the strategies, we drew on quotes from a sample of 239 student ePortfolios and final class reflection papers from 12 sections of a senior capstone over two academic years (2014-2016). These students in this sample were from a range of liberal arts and science majors as well as from professional schools such as engineering and business. The quotes are meant to highlight key ideas and add depth to our lessons learned. We discuss the strategies next.

Redevelop the Curriculum to Meet Student Needs

Although the capstone course began as a standard ePortfolio course, as previously discussed, by 2013-2014 we realized that the course needed to redevelop the curriculum to help meet the challenge of multiple ePortfolios. Initially, this meant reviewing the value of the ePortfolio and seeing what was the core of its purpose. At the core were opportunities to make meaning of students' experience and to reflect on their learning. From there, we developed ways to frame the curriculum to help students deepen their reflection—whether it was their first ePortfolio or their third ePortfolio.

Starting in 2014, the capstone implemented a three-tiered set of assignments to address the differing levels of experiences of students with ePortfolios. The goal of this innovation was to engage students in meta-reflection across their minor and to strengthen their capacity for reflection, regardless of their prior experience. The three-tiered assignment or options for ePortfolios were standard, pathway, and legacy.

Standard ePortfolio assignment option. This assignment followed a more traditional ePortfolio approach, drawing on three artifacts or key learning experiences, and a philosophy statement. In the minor, students' three artifacts could correspond to the three

content areas in which students were required to complete classes. Students were asked to reflect on their learning in classes and in activities and to develop written products detailing their reflection.

For example, one student's ePortfolio focused on artifacts related to three courses in which she had studied, engaged with, or reflected on working with women and children in various social service contexts (child welfare, HIV/AIDS service agency, and immigration). In her philosophy statement, this student connected her takeaways from these courses, concluding:

> My interests in psychology, women's studies, and children combined and led me to social work, where I found my passion. The minor introduced me to the field of social work and what career I may find within it.

Pathway assignment option. For students who have already completed at least one ePortfolio, this assignment enabled students to reflect on their social justice journey or "pathway" through their undergraduate career. Drawing on self-authorship literature (Baxter Magolda, 2008), students developed a meaning-making project in dialogue with the faculty and with feedback from their peers.

As an example, one student with a double major in International Studies and Spanish had two pre-existing ePortfolios. She used the Pathway option as an opportunity to integrate the previously disconnected artifacts developed in the silos of her two majors. She used the theme of "an analytical thinker":

> I have successfully been able to weave together these three courses of study in order to formulate an interdisciplinary track that has inspired, encouraged, influenced, and molded my interests and passions. Through the Spanish major and my international travel experiences, I have achieved fluency in written, spoken, and read Spanish, and intend to pursue a career through which I will make full use of my language skills. International Studies has given me a global perspective and has provided much of the framework through which I consider international social issues. Community action and social change has irrevocably changed my life track, exposing me to questions of identity and the importance of intergroup relations in addition to those of social justice and community engagement, and solidifying my deep-rooted passion of working closely with people and communities to make the world a better place. Although not appearing to be related at first glance, these three concentrations have overlapped significantly over the past four years, oftentimes engaging me in similar subject matter across their different courses: globalization,

development theory, Marxism, social movements, social justice, social change, identity, power, privilege, and plenty of opportunities for community engagement. I could not have chosen a better combination to have fueled my intellectual curiosity during my time as an undergraduate student at [this university].

Legacy assignment option. Again, for those students who had completed multiple ePortfolios and had the opportunity to integrate them with a previous experience, students were able to develop a meaning-making project to "give back" or create a legacy to a past organization or experience. In dialogue with the faculty and through peer feedback, the students would identify a social justice course or student organization that had been formative in their development as an agent of social change. Students created a meaning-making project, emphasizing both their takeaways from the experience and how they planned to communicate the legacy to the next generation of student activists.

For example, an African American, first-generation college student developed a guide for introducing incoming students from underrepresented communities to social justice opportunities on campus. This is something that she wished she had had, and the capstone enabled her to create a guide for others. She reflected on the experience, stating the following:

> I may have went the whole four years without discovering what some of these spaces have to offer. My work in the social justice community (some of which is highlighted in this ePortfolio) has shaped my entire college experience and given me a lens through which to understand myself in a new environment. I hope that this guide can start that same process for another student. It only takes one experience to change the way you think.

Acknowledge the Confusion and Frustration of Students

We also quickly realized that we needed to address the confusion in the multiple terms and approaches that students, prior to the capstone, had been taught about ePortfolios and, more importantly, the frustration that students felt overall with the ePortfolio process. Some of the confusion grew from the many different ways departments and programs implemented ePortfolios. Other students were challenged by basic technical literacy skills since many programs and departments used a disparate set of online platforms for the ePortfolio, including Google, Wix, and Seelio. (Because Seelio is the platform supported by the School of Social Work, often our students use that term when referring to their ePortfolio.) Still others were frustrated by the

sense of redundancy in the process. One example of this was students who were not sure if they would "have enough" to complete another ePortfolio; for example:

I now attribute part of my initial hesitance to my previous belief that I did not have enough experiences within [the minor] to fill an entire webpage, let alone somehow relate my experiences to years-long lessons and epiphanies. But as I began to work on my artifacts and fill-in each of the different clusters, I soon found that many of my experiences related in subtle ways that just took a little longer to discover, to a point where I was wondering what I would be able to fit onto my ePortfolio. I soon realized that this was much more than a simple project for a class; it was a microcosm of my entire college career.

As a way to counteract this confusion and frustration, students were asked to discuss the value of reflection and to take the time to pause and reflect on their work. We often found that students, especially seniors, rush through coursework without pausing for reflection (e.g., " Hey this is what I've done, the end"). However, when given that opportunity, students recognized the importance. For example:

I've learned so much about myself through this entire capstone process, which I honestly did not expect to see. For instance, the ability to articulate the work I've done. It's really easy to say, "Hey this is what I've done, the end." But that doesn't help you explain any skills, real life experiences, or important takeaways.

Another student noted the importance of additional reflection across the student's multiple ePortfolios:

The biggest takeaway that I am gaining from [the capstone] came from re-creating my Seelio ePortfolio. I had created a Seelio before, but interpreted the ePortfolio really only one-dimensionally. I added the works that were required of me, but did not do any reflection upon how I could integrate the works to better reflect my experiences. Now I truly understand how online ePortfolios can be used as an integrative learning tool.

Other students noted the challenge of working across ePortfolios but also the value in deepening their understanding between them and the greater learning from them, especially making connections often across academic disciplines. This is illustrated by one student's quotation:

I had previously tried to keep my art and [social justice] work separate, and I realized that wasn't going to work any longer. The actual joining of my two ePortfolios was difficult and slightly overwhelming, but ultimately it provided amazing clarity about the type of work I want to do. Through creating my ePortfolio and also through the showcase, I learned that I have a difficult time putting into words what I'm interested in and how passionate I am about this subject. I think I've been doing so much learning within this area that I am still learning how to talk about it to people who are not in this field of work. This is something that I've been working on, and now that I've shared my ePortfolio on social media, other people have helped me articulate it from their perspective.

On this point, another student stated:

As I mention in my ePortfolio, I had always felt like I was seeing pieces of the same subject matter across my various classes from different disciplines. I don't think this is any coincidence, although it is hard to say why this happened so often—but now through Seelio, I can explain and effectively present how my interdisciplinary academic tracks in fact informed each other, for example. Improving my Seelio and reflecting upon my undergraduate career helped me synthesize all of the very meaningful experiences I've had, and also allowed me to realize how I arrived at the point where I am now . . . and I will carry this understanding with me in all of the new beginnings that I venture towards in these coming years.

Encourage Students to Include the Whole of Their Experience: Academic and Co-Curricular

Navigating multiple ePortfolios also meant encouraging students to include the whole undergraduate experience, not just their academic experience. As noted, this is an important component of ePortfolios and has been a focus of recent scholarship (e.g., Cambridge, 2010; De Santis & Serafini, 2015; Reynolds & Patton, 2015). In our capstone, we found that many of the previous ePortfolios had, however, only included academic course work, leaving out reflection and learning from outside of the classroom.

We realized that once students could see the range of potential learning content, they could draw connections between in-class and out-of-classroom learning and that the multiple ePortfolios learned to build on rather than duplicate one another. For example, one student wrote that bringing their whole experience into the ePortfolio was, at first, not in that student's

"comfort zone," but then realized how much was learned from connecting together the two:

> This course has helped me come to peace with the fact that I may never stop learning . . . This growth is something I should be proud of. The integrative learning that I've intentionally put together for myself through clubs and classes has pushed me outside my comfort zone to where the "magic happens." I see that magic as the learning process and my mind opening up to new perspectives and critical thinking.

We found that encouraging students to add co-curricular activities enhanced the ePortfolio process by broadening and deepening conceptual frameworks about engaging with social issues and also developing context-specific skills, competencies, and interests. For example:

> The capstone course also helped me tie together all of my collegiate experiences and internship experiences with my minor. Prior to taking this course I had never reflected upon my experiences here at the University or the journey that I have taken since my freshman year here. I now better understand my social justice journey and how I got to where I am today. Similarly, I also better understand how my political science and sociology backgrounds influence my social justice interests and social change efforts. Finally, through this class I learned how my [social justice] experience has helped me to take steps toward creating long lasting social change and ultimately instilled a passion within me not only to make my community a better place but to take the steps necessary to make the world a better place.

Still another student more explicitly described the minor-related skills and competencies, and the way that an ePortfolio process helped her to link across multiple experiences:

> I learned all of these—relationship building, plan management, and communication—from various places, not only through [the minor]. But, what [the minor] has done in relation to these skills is crucial for my desired career path. Through [the minor], I've come to understand why each of the above skills is important and how to leverage them in different situations based on audience, community, and how they work with the identities I hold, seen and unseen. Putting my time at [college] together with what I've learned in my [minor] classes has many overlapping lessons that I am sure will become even more apparent in my future endeavors.

Use the ePortfolio Process as a Tool for Promoting Possible Selves

The concept of *possible selves* (Oyserman, Bybee, & Terry, 2006) is often connected to helping students see the potential in their future. In the case of the capstone, a strategy used to deepen the process of the ePortfolio—regardless of the number of ePortfolios the students had done—was to help students see their past experiences and, at the same time, encourage them to envision their future. Envisioning the future was linked to helping students understand the need for self-care and connecting them to alumni who could be resources, role models, and mentors as students were contemplating their future work.

We learned that to support student's ability to see their future selves, we needed to help them remember their past. One way we did this was through an activity that asked students to recreate their college experience—highs, lows, and otherwise—using a rope. Students demonstrated high points, low points, or used the rope to create new patterns. The rope enabled people to visualize their learning and their personal growth. Often this helped students to see new connections between experiences that previously had seemed disconnected. For example:

> I discovered that while many of my experiences on campus seem disconnected, e.g., my experiences with social change work and my experiences with sustainability work, but are quite interconnected social issues. I have discovered that my core values encompass matters of community, social justice, and sustainability. And through the process of presenting these reflections to my classmates and outside colleagues, I have discovered the importance of synthesizing my reflections into something that is not just beneficial to my own learning experiences, but can also be helpful to others and present my experiences in a succinct manner.

Another student found that the ePortfolio process uncovered passions that led to a more developed sense of a possible self:

> Prior to taking the capstone course, I was unaware of the extent to which my self-identity was intertwined with my interests in workers' rights and labor. Through this experience and the various reflections and reflective activities that I completed over the course of this class, I came to the realization that not only am I interested in these issues, but they mean a lot to me because they are so closely related to my identity and the things that mean the most to me. Ultimately, this experience

made me more aware of just how passionate I am about these issues and how they may help to shape my post-grad experiences. I hope to work for the federal or state government or for a non-profit organization working to address workers' rights, income inequality, or women's rights at work.

Additionally, we worked to connect seniors with alumni who shared their social justice interests through panel discussions, individual interviews, and social events. We discovered that interviews with alumni added a powerful dimension to classroom learning. Students were asked to include learning from their interview in some aspect of their ePortfolio product. Often the impacts of these interviews were incorporated into student reflections on their learning, past and future. For example, one student noted:

> This last [minor] class connected me to so many future alumni that I hope to keep in touch with as later in life we can work together to keep "changing the world." The best part about [the minor] is the fact that the work I do will never end even if my courses are completed. I can always show community action on any social justice issues any place I go. Before the alumni panel I was really concerned as to how I could manage to do [social justice] work after graduation. This is when I learned and am glad for social media as it makes connecting with others doing [social justice] work easy. My immediate future will be in the working world where I hope to land a job that allows me to do community action work so I can love what I do and still feel connected to social change in the world.

Another senior used his alumni interview to address his feelings about working with community members, including closure:

> Therefore, it's important to take the advice of both alums I interviewed, which was that these people survived before you and are going to need to learn to survive without you. Trust them to survive their own lives; help in the ways that you can, but know that they will find ways without you.

Alumni were often helpful to seniors clarifying post-graduation goals and plans. For example, one student wrote:

> Going through exercises in this class like the alum panel in class and our alum interview outside of class, it really helped to solidify my confidence in my goals and plans. I do think it's a great idea to have a Q & A session about how [the minor] can contribute to your life post-grad, but the biggest

thing I took from that experience is that I already know, and that's a huge relief.

These components, tied to helping students prepare themselves for the future, also enabled us to discuss the importance of self-care. Self-care is often understood as a set of activities designed to prevent burnout. While self-care can take many forms, through the capstone we learned to discuss the importance of pausing and creating connections between the various components of the work. Especially in social justice work, research suggests that reflection activities and strategies for self-care can buffer the challenges that emerge in the workplace (Jackson 2014; Richards-Schuster, Ruffolo, Nicoll, Disletrath, et. al., 2015). For example, we used the class to pose a series of questions for class discussion, such as:

- What are you doing now that indicates a healthy approach to diet, exercise, sleep, and rest?
- What are your sources for education about social justice issues? How will this education continue after graduation?
- Where, how, and with whom do you recharge your emotional batteries?
- What are your core values, and how will you continue to nurture them?

In addition, as faculty, we required at least one individual meeting with a student while the capstone course was in session. In all cases, our experiences as faculty were similar to the literature on capstones as high-impact practices (Kinzie, 2013; National Survey of Student Engagement, 2007; Schermer & Gray, 2012): more student time focused on the process results in a better capstone experience, especially if that included direct faculty contact.

Through these activities, students began to realize the importance of reflection as a tool for self-care. For example:

> In this class, one of my favorite activities was when we were reflected on the different parts of self-care—spiritual, physical, mental, relational. I was surprised and happy to reflect on these different areas to find that I think I am doing a good job in the realm of self care. I am only taking eleven credits this semester, so I have not been as stressed out as I usually am, and I am able to focus on myself. This got me thinking about transitioning into graduate school next year in the MSW program. I am hoping that the routines and habits I am setting myself up with right now will continue through the program so I can ensure that I am taking care of myself even when the busyness picks up again.

Use the Capstone Class to Build Community and Networks for the Students

Regardless of the pathway or experience with previous ePortfolios, we found that it was critical to create community in the class and used the class to support students in sharing their experiences with and transition from the university. For some of our students, it was helpful in this time of social transition to use their capstone coursework to facilitate their leave-taking from life as an undergraduate student.

This sense of transition was felt differently by students. For some, it was a personal transition, a way to continually dialogue with themselves about who they have become and where they want to head. For example, one student used the ePortfolio to continue to hold himself accountable for social justice work. This student's legacy ePortfolio ("Legacy Project—A Long Way to Go") included a component called "Continuing Reflection for White Solidarity." The reflection was addressed to first-year white students aspiring to be allies for others with marginalized identities, generously shared lessons learned over 4 years, and included questions for them and for others to continue to reflect upon over time. Other students reflected on how the capstone could be a way to create a personal plan for future work. For example:

> [The capstone] was a really great experience for me, and I took a lot more from the class than I was initially expecting to. The two biggest takeaways I have from this class are (1) an increased assurance in my personal plan, and (2) a better idea of how to continue my social justice journey outside of a social-justice-education environment.

Other students appreciated the ability to work with their peers to develop their reflection, their learning, and their ePortfolios. The ability to make meaning in a collective way created a new form of community for the students to engage with post-graduation. For example:

> This semester . . . has given me an opportunity to deeply reflect on my social justice experience throughout college, and examine how I can use the insights I've gained in my future work. Before now, I never thought about how the experiences I've had work together or how'll I use my [minor-related] learning moving forward. Having the chance to work with former classmates in the capstone, and compiling some of my old work for the Seelio ePortfolio has helped me to appreciate the things I've accomplished, and realize that they may actually be useful in my future.

Another senior reflected on the importance of sharing and the way that sharing can reduce future anxiety. One student wrote:

> The class's content helped synthesize my accomplishments, boost my motivation, and quell my anxiety and confusion about my future as a change agent. I think this class is just what I needed. I realized that my anxiety came from lacking closure and synthesis . . . it caused some necessary confusion. But hearing the journeys of my beautiful 401 classmates—their specific [minor-]related interests, their aspirations, and the work they have done so far—instilled within me a new self-confidence, as well as an appreciation for my classmates.

This idea of appreciation, community, and connection became a critical takeaway from our capstone. Regardless of the approach to the ePortfolio—or the experiences with past ePortfolios—the capstone and the meta ePortfolio process became a catalyst for forming new connections and providing hope for the future, as noted by two students. One student stated:

> My learning [from the minor] has taught me that we are truly all not the same, and that is a beautiful thing. Celebrating each other's different cultures and experiences creates new knowledge. That is how real social change occurs. I wish I had more time to spend talking in depth with my classmates. After seeing all of our different Seelio ePortfolios, I want to know more about them, and I want to work on social change issues with them. In today's society it seems like you have to lock people in a room to make them talk to each other and have genuine conversations.

A second student wrote:

> Friends are part of this realization, but the opportunity to reflect on my experiences is what helped me to think about the ways in which I have approached situations and the ineffectiveness of my attitude at certain points, especially when talking to those with similar identities and privileges as mine. This class and showcase also helped me to realize that even with all this hate in the world, there are a lot of people working to change it, and that gives me hope.

Evaluation Findings

Over the four terms examined in this paper, we found that students valued the curriculum and

instructional changes in the course. Average course evaluations since 2013 reflected that students *agreed* or *strongly agreed* that "this course was an excellent class." Corresponding with the positive course evaluations was an increasing number of seniors who greatly valued the course, comparing it favorably to the rest of their undergraduate career, a comparison not prompted in the final assignment. The following quotations provide examples of final student feedback from course evaluations. One student wrote:

> My choice to be a [social justice] minor was one of the best decisions I made in my college career. It has taught me so much in and out of the classroom. The capstone course was the first time I got a chance to realize how much I actually learned over these four years in association to [the minor].

Another student noted:

> I found the capstone course and ePortfolio to be extremely beneficial because it forced me to take time and reflect on my experiences from the past four years. Creating the ePortfolio also helped me integrate these experiences and see them as one continuous journey.

A third student stated:

> Although the capstone course is only one credit, it was a significant piece of my experience [in the minor]. I had never been required to take a capstone course before, so I came in unknowing of the purpose of such a class or what I would take away from it in the end. My self-development and changes in beliefs, personality, and passions that I previously attributed to my overall college experience are truly rooted in [social justice], something that I did not realize until completing this course. I believe that [the minor] has taught me significantly more about myself than any other course or experience at [this University].

Next Steps

We learned a great deal from our effort to navigate the multiple ePortfolios within our capstone course. We know, as more ePortfolios efforts emerge, more creative approaches will be needed to help students deepen their reflection, broaden their perspectives, use their learning to help prepare them for the future, and find community among peers. While this can be frustrating and challenging, it can also be exciting. From our vantage point, we see the proliferation of ePortfolios as positioning students to meet the demands of the 21st century.

In our minor and capstone, we recognize that more work will be needed to support the ongoing development of ePortfolios. We also see the need for future research to document the impact of ePortfolios for students over time. Anecdotally, we know alumni who have returned to their core values to review, remind, and refresh themselves. We also know that students have added to their ePortfolios after the capstone. However, our inquiry has not been systematic.

Our next steps include continuing to document and refine our teaching strategies for navigating multiple ePortfolios. As our sample size increases, we hope to examine the following:

1. How does the type of pre-existing ePortfolio drive our navigation? Intuitively, an ePortfolio developed for a study-abroad experience is easier to integrate into a social justice capstone than a professional ePortfolio created by an art, business, theater, or engineering student. Sometimes students in these programs report that they seek out our minor because social justice is rarely mentioned in their classes, if at all.
2. Can ePortfolios developed in our capstone be used to measure more comprehensively student development over time, especially an undergraduate pathway in the exploration of possible selves?
3. Our first paper explored the use of ePortfolios in assessing program goals (Richards-Schuster et. al., 2014). Can this assessment tool be applied more broadly to the robust literature regarding social change leadership (Astin & Astin, 1996), as well as high-impact educational practices (Kuh, 2008)? Is there some *value-added* to requiring multiple high-impact practices as part of an undergraduate minor? If there is some value-added, how does it fit or not with what is already known about developing leadership for social justice?

In closing, while some critics of higher education forecast "the end of college" (Carey, 2016), we are hopeful about the increasing integration of teaching with technology. We believe that our strategies provide a useful framework for future instructors who will teach capstone courses with ePortfolio development, as the ePortfolio movement inevitably succeeds.

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The Use of Visual Images in Building Professional Self Identities

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ePortfolios are recognized as a pedagogical process that facilitates and benefits the development of professional practice and critical thinking, curriculum, and assessment for Higher Education academic teachers. Effective personalized introductions to ePortfolios engage with the reader by sharing narratives and personal perspectives that demonstrate reflective thinking. This article describes a professional development symposium workshop in which a hybrid process explored the visualizing of professional selves. It built on a previous professional development session in which creators of ePortfolios were asked to find an image used as a metaphor or symbol explaining a philosophy of professional practice. The process described here is an amalgamation of techniques currently used in separate undergraduate degree programs by each author and adapted to demonstrate a way to think about the self as a professional and was planned by the authors after conducting a year-long series of webinars on ePortfolio professional development. The images created by the symposium participants and their supporting statements demonstrate that explanations of a sense of professional self were enhanced by the ePortfolio introduction, narrative writing, and professional philosophy to engage an audience effectively. Application of this process allows visual images, whether literal, metaphoric, or symbolic, to provide a means for academics as well as post- and undergraduate students to present and explain their professional selves to an audience.

Background

Academic teachers in Higher Education are expected to create opportunities for their students to engage in learning that relates to real world experiences by providing authentic learning environments that include rich learning and engagement in higher order thinking skills. In many cases, students adapt to a new pedagogic practice quickly if it is integrated purposefully into curriculum and relates to real world experiences. As students become pre-service and early career professionals, the use of a portfolio enables them to present themselves to prospective employers and peers in a more individual and personal manner.

As a pedagogic tool through which students can use authentic evidence to document their achievements and skills, ePortfolio is acknowledged as having more than one purpose or use (Snider & McCarthy, 2012; Stefani, Mason, & Pegler, 2007). ePortfolios are a creative application of educational practice to support and benefit learning (Jafari & Kaufman, 2006); for many educators, the ePortfolio as a pedagogical tool provides a platform for teaching delivery, course management, and personal development as well as for assessment.

Research has shown that ePortfolio development encourages students' sense of self through a process of skills-uptake such as organization; collecting and classifying of evidence; utilization of tools; reflection on and in discipline specific knowledge, learning, and tasks; and higher order thinking such as synthesis and evaluation of learning (Chau & Cheng, 2010; Rowley & Munday, 2014). This article describes a professional learning workshop process that was presented at a national symposium and derived from a curriculum feature based on Ryan and Deci's (2000) self-determination theory and Lawrence's (2006) ideas about self-concept, which encapsulates the strength of ePortfolio narrative around students' thinking about their ideal selves as future professional practitioners.

We have, as active academic teachers, designed ePortfolio curricula that have been engineered into the degree programs of our respective universities. The outcomes of ePortfolio creation in these degree programs have been interpreted through the lens of a "sense of-self" model created from the superimposition of the self-determination continuum proposed by Ryan and Deci (2000) and Lawrence's (2006) ideas about self-esteem. Previous research concluded that immersion in the creative process and the reflective practice of constructing a visual image produced a strong sense of self with regard to preparing students for a future profession as teachers, musicians, medics, scientists, etc. (Rowley & Munday, 2014). This article also draws on the findings of one-year research project involving webinars that we managed and presented as professional development for academic teachers and curriculum designers who were working (or wanted to work) with ePortfolio for students at Australian higher education institutions. The one-year project, titled Strengthening IT Assisted Teaching: ePortfolio Use for Teaching Staff in Higher Education (Polly, Rowley & Munday, 2016), consisted of making a general call for webinar attendance to members of four partnering universities along with an advertisement to the national ePortfolio Australia website and the Google PebbleGroup. We conducted and recorded a series of webinars, then placed them on the ePortfolioAssist.com.au website for public access. Workshops were conducted at each of the university venues so that those present could have have a face-to-face discussion on the webinar topic.

The webinar program directly affected the professional development described in this article, which sought to analyze the multi-layered relationships provided by makers and viewers of ePortfolios, and one specific aspect was to investigate the potential for broader uptake through the use and inclusion of a visual image. The results from all of the professional development indicated that in different discipline areas a range of factors influence academic teachers' preparation of reflective students, through the use of the ePortfolio. This understanding may signal the need for individual and tailored approaches (depending on discipline and cohort group) to ensure that the symbolic nature of the visual image enables a broader understanding of self.

This aim of this article, therefore, is to argue that visual images help people to discuss and explore future professional traits. Educators who are charged with the responsibility of ensuring students are able to use the graduate attributes for an active reflection of their studies and knowledge may see this discussion as a possible pivot point in professional learning for the training of future professionals and the industries in which they will seek to work. The outcomes of the webinar and symposium professional development showed that ePortfolios, through their reliance on student choices, decision making, production of an individual's profile, and potential for contribution to identity construction, can be seen as a valuable tool for developing the individual's sense of self. After reviewing the pertinent literature, we have described the process undertaken in the symposium workshops, and in the Discussion section, then linked these outcomes to the outcomes of student ePortfolios in each university curriculum.

Literature Review

The use of ePortfolios as a digital space has grown exponentially with the advent of more sophisticated online platforms that use and assemble a variety of file formats. These platforms make it increasingly possible for academic students and teachers, as well as those in the professions, to present their understanding and accomplishments within a particular field in a more engaging way to different audiences. The improvement in technologies available for ePortfolios has led to research into curriculum design and pedagogy that gives owners of ePortfolios the advantage of demonstrating and explaining their learning (Kennedy & Shirley, 2011; Johnsen, 2012).

The flexibility of the online space allows personalized learning to be more dominant in higher education, with student-centred curriculum enabling constructivist approaches. Creators of ePortfolios are being asked to keep in mind the audience who will engage with their collections of artifacts and write convincing narratives to interest specific viewers (Cameron, Simpson, Warren, Begg, & Cumming, 2008); therefore, the process of curating evidence also requires deep reflective thought and encourages the ePortfolio authors/owners to think about ways of presenting themselves.

In the research, there have been a variety of approaches to presenting a professional self through ePortfolios that have been noted. In many cases, the ePortfolio provides a vehicle for presenting evidence of synthesis of theory and practice in specific disciplines and an opportunity to provide a self-appraisal in regard to industry professional standards (Gallagher & Poklop, 2014; Lewis & Gerbic, 2012). Hulme and Hughes (2006) recommended "bringing the self" into discussions of professional practice and the use of "patchwork text" to represent professional development (p. 193). In this case, "patchwork" refers to texts that are linked to illustrate a theme or set of perspectives, which the ePortfolio creators use in "fashioning or fabricating their *own* narrative of their personal and professional development—'my story'" (Hulme & Hughes, 2006, p. 196). Gwozdek, Springfield, and Kerschbaum (2013) discussed the self as a key aspect of professional development, saying that self-assessment through self-reflection can be characterized by self-awareness of personal value, responsibility, and contribution, where a purpose for an ePortfolio can be career self-presentation. Going beyond self-representation, self-reflection is discussed by a number of authors, including Porto and Walti (2010), who emphasized that the use of ePortfolios allows "a wide audience to look into learners' past experiences, self-image, personal and societal attitudes and values, as well as current life circumstances" (p. 227).

In this way, the literature references language that was used in a metaphorical way to support and scaffold the ePortfolio creator to write a narrative; however, the actual use of images, other than personal identifying images, is not common. Images are traditionally included in an individual's ePortfolio to illustrate points being made in a narrative, or as the provision of evidence as documentary artefacts; although Gallagher and Poklop (2014) reported that there is mixed success in meaningful links between images and text in many published ePortfolios.

There is research that explores the use of visual images and metaphors in identity building (Bailey & Van Harken, 2014; Dowling, 2011), and Cheryl Hunt (2001) reminds us that "metaphors provide a particularly useful way of seeing the familiar differently" (p. 276). The use of metaphor in the language employed in ePortfolios has been researched with the recognition that metaphors are an integral part of language and are an indication of deep reflection as

Figure 1
"Sense of Self" Model
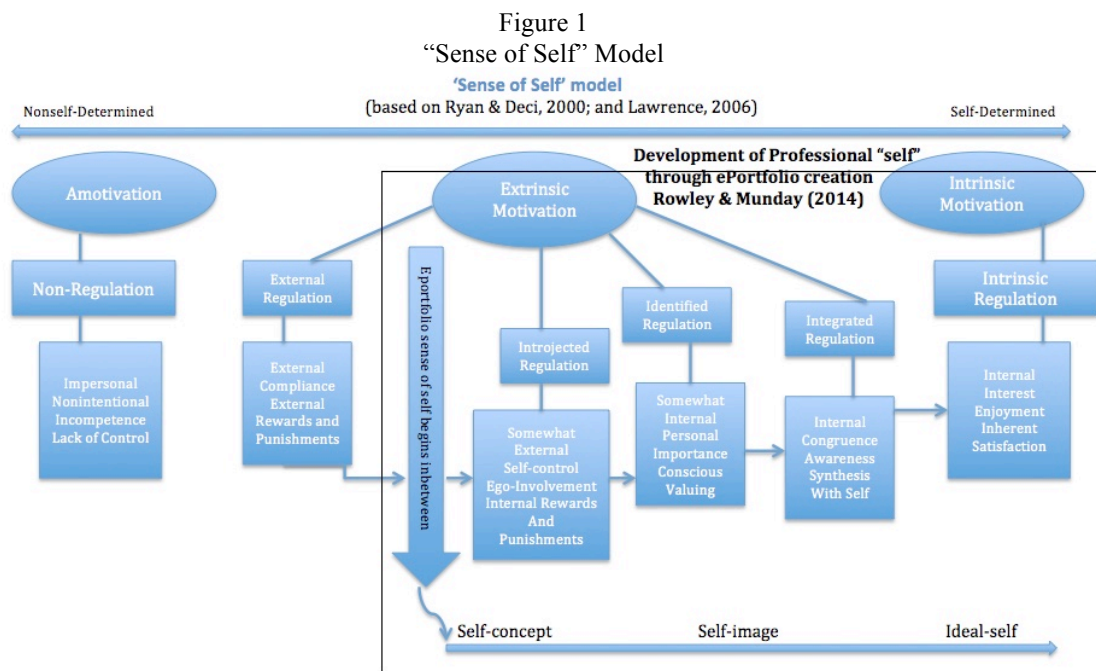
Note. This "sense of self" model was created by synthesizing a table demonstrating self-determination theory (Ryan & Deci, 2000) and Lawrence's ideas about self-concept (2006). We have noted that students producing ePortfolios embedded in higher education degree programs tend to move through the descriptors in the bounded rectangle, from extrinsic motivation to intrinsic motivation.

learners link ideas and evaluate the learning process (Brandes & Boskic, 2008). Some authors have posited that the metaphor of *story* is now being highlighted as a new way to look at ePortfolio assessment, instead of the traditional series of checklists (Finger & Jamieson-Proctor, 2009, p. 76). This progression of creators of ePortfolios to see themselves through narrative and metaphor can be regarded as the progression from a self-image to an ideal or professional self and can be enhanced by thoughtful and purposeful pedagogy (Rowley & Munday, 2014).

The overlay of two models, one illustrating self-determination theory (Ryan & Deci, 2000) and the other the model of ideal self (Lawrence, 2006) may be synthesized to create a "sense of self" model (Figure 1), acknowledges the importance of the creators' sense of self in ePortfolio creation, and suggests why ePortfolio curriculum design is important (Rowley & Munday, 2014).

The evolution of technology and more flexible online platforms have enabled creators of ePortfolios to use a wider variety of file types within more easily created versions of ePortfolios for different audiences. The ability to produce an aesthetically pleasing ePortfolio product means that we, as educators, need to provide structure to include more meaningful images and visual materials to enhance and emphasize the narrative of self being presented.

Method

This section discusses what we did in the 2014 and 2015 National Symposium Professional Learning Workshops. We implemented curriculum using metaphor and symbolism in regard to students' senses of self in their academic teaching with ePortfolios in undergraduate university degree programs and collectively recognized the impact this process has in enriching the student reflections regarding possible future and professional selves. This provided the foundation for developing an initial professional learning workshop with other academic teachers and curriculum designers in 2014 and was trialled by two of the authors at the national symposium ePortfolios Australia in Melbourne, Australia in September and October, 2014, the outcomes of which provided the platform for future development of the use of metaphor in ePortfolio practice (Munday & Rowley, 2014). The aim of the 2014 workshop was to develop participants' knowledge of how students might apply the skills developed through ePortfolio creation. The workshop leaders adapted and simplified processes each had embedded in their undergraduate curriculum. Participants were encouraged to think about the literal, metaphoric, or symbolic meaning of several images provided in the 2014 workshop. They were then asked to think about and note the qualities of their ideal teachers or mentors, and discuss these qualities. The discussion was followed by consideration of a visual

Figure 2
Photograph by Jennifer Rowley. The image was chosen by a 2014 national symposium workshop attendee to illustrate the metaphor of "pulling back the curtain to reveal the truth," an attribute of a good teacher from the participant's past.

representation of the noted qualities, and finally the participants were invited to seek an image from a website archive of National Geographic photographs, which allows use of its images with acknowledgment (National Geographic, 2017). The use of the National Geographic website meant that all participants could easily view a collection of a variety of photographic images from different cultures, locations, and natural sites that could trigger an idea of meaning or story suiting their personal reflections about mentors and teachers. The workshop activity then enabled participants to discuss the image as a vehicle for deeper reflection regarding their sense of self and how these understandings translated to themselves as professional educators and designers of learning.

Another workshop was designed for implementation in 2015 to extend the previous workshop outcomes and was centered on recognition and development of professional identity. The workshop facilitators (who are the authors of this article) began by asking workshop participants at the national symposium ePortfolios Australia in Perth, Australia from September to October, 2015 to consider and recognize their sense of professional identity instigated by a series of personal photographs (Rowley, Munday & Polly, 2015). Using items they had brought to the workshop, the participants, who were peer academic teachers and curriculum designers, were asked to take a photograph, using their smartphones, of something that was literal, metaphorical, or symbolic and that represents a facet of themselves. They were asked to review this photograph and follow up by taking a second photograph of the item from another angle. Finally, participants were asked to take a third photograph by standing up and photographing the item from a wider perspective. This allowed the participants to experience a spatial separation from themselves as

Figure 3
Photograph by Mark Henderson, "My Object"

Note. An example of one of the first in a series of three photographs that 2015 national symposium workshop participants took of a personal object they were able to say "said" something about themselves.

subjects and to consider other aspects of how they represent themselves physically and professionally, which was then reflected upon as part of their professional selves. After a discussion period, the participants were asked to write three statements about the three photographs they had taken. This reflective process gave them an opportunity to start thinking about aspects of their identity and allowed them to discuss and share in an impromptu manner. Examples of the photographs and reflections were then shared with the entire group, after which the facilitators presented the processes of developing professional identities in each of their undergraduate degree programs using the "sense of self" model.

Results: Examples of Workshop Participants' Work

In the 2014 national workshop, the participants engaged in discussion about the qualities of teachers or mentors who had influenced and inspired them in regard to their current professions. Qualities discussed and shared were mainly centered on recognition of ability and talent; understanding of the individual's suitability for a profession; and being a good listener, being a good counsellor, and fostering character and individuality. Figure 2 shows an example of a metaphor, "pull back the curtain to reveal the truth," for an attribute of a mentor teacher who brought out the

hidden talents of those she taught. The participants in the workshop overwhelmingly agreed that they were able to discuss their positive professional attributes more easily through the use of images, whether literal, metaphoric, or symbolic.

The 2015 symposium workshop extended the discussion around professional self and the participants' use of images to facilitate that reflection on self-identity. Rather than asking participants to find an image on a website, they were asked to take a photograph, using a smartphone, of a personal belonging they had brought to the workshop, and then asked to write a sentence about how the object said something about them professionally. Examples of objects that were chosen for photographing were: a diary, a pen, a notebook, and a coffee mug. Examples of explanations for the choice of object ranged from a physical description of the object to explaining how it had a similarity to the person's character or actions. For example, one participant noted, "this diary represents me as a professional as I like to help academics add a little bit of glitter to online teaching." Explanations also discussed how the object might appear to be ordinary, but was not. Figure 3 shows an example of one of the first photos taken by a symposium workshop participant, who wrote, "This is my pen—a perfectly ordinary looking device on the surface, BUT it is also a recorder device that combines old and new

Figure 4
Photograph by Pippa Nelligan, "From the Bottom Up"
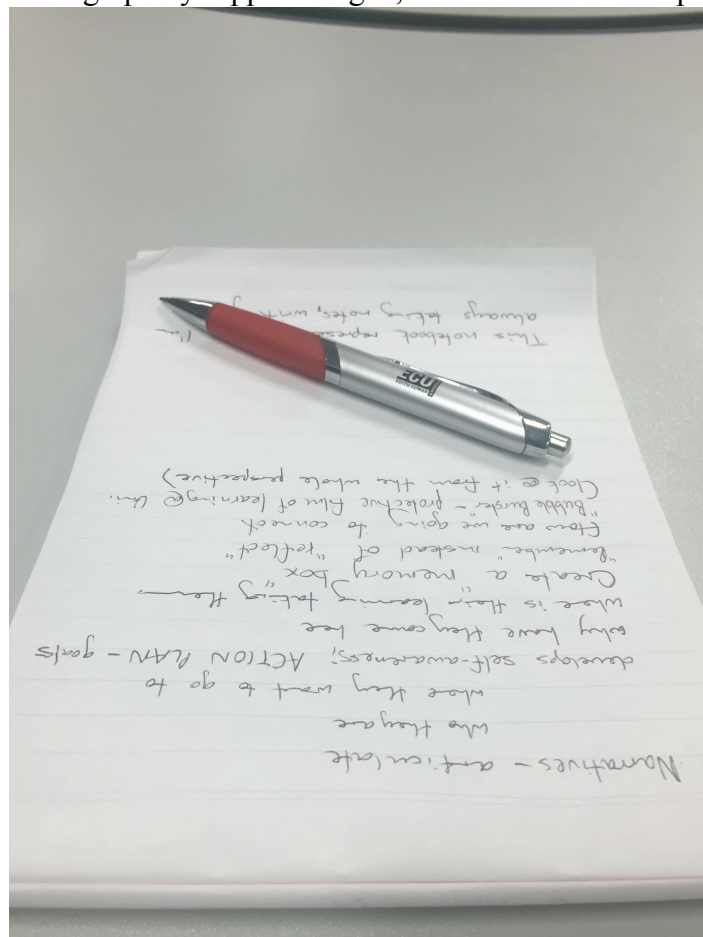
Note. An example of the second photograph taken in a series of three at the 2015 symposium professional development. The participants were first asked to take a photograph using a smartphone of a personal object that says something about them, followed by a second photograph of the same object from a different angle.

technology." Another respondent referred to the item being a symbol for current professional life, in which the person "need[s] a lot of coffee to work long hours . . . and constantly feel[s] I have to keep up to date."

The second photograph that participants were asked to take was of the same object, but from another angle. Again, they were to write a sentence about how this image could relate to their professional selves. The responses tended to be in relation to the angle the photographer had decided to use—the angle became a metaphor for themselves in a professional vocation. Figure 4 shows an example of a second photograph taken by a 2015 symposium workshop participant, who described the image as, "Picture from the bottom as I like to help underpin teaching from the bottom up with supporting digital technologies."

Finally, when participants were asked to stand up and take a photograph of the same object from a wider angle and then consider what this image might say about them professionally, the impact of the image changed. Responses in this final category tended to emphasize the use of metaphor or symbol to represent the participants' professional attributes. Figure 5 shows an example of a third image taken by a participant in the 2015 symposium workshop, who explained that when the object was photographed "from a distance, I can no longer read the words on the diary . . . as with good teaching the devil is in the detail." Another said, "It is a symbolic device that interacts with everyday technology and combines the old and new to help me record my ideas and thoughts in traditional ways and store them instantly electronically." Another participant

Figure 5
Photograph by Jacqueline Patten, "Taken From a Distance"

Note. This is an example of the third photograph taken in a series of three by a 2015 symposium workshop participant. The participants were photographing the same objects from different perspectives and relating it to their "professional selves."

noted, "The wider perspective shows how I prefer to learn—in groups, through discussion and the sharing of ideas. Ideas are more likely to stay with me if I have discussed them with someone."

The images created by the participants and their supporting statements demonstrate that explanations of a sense of professional self were enhanced, and that they were able to engage effectively in discussion with their peers around narratives and professional philosophies through the use of the images. The workshop outcomes led to a description of the deeper parallel processes in the embedded design and discussion of professional and personal selves through ePortfolio design and creation in the facilitators' respective undergraduate degree programs.

Application of the Method

In this section, we present the higher education degree programs and pedagogy presented in the 2015 national symposium workshops to illustrate embedded ePortfolios.

Medical Science Student Perspective

Students undertaking a third year science course, Molecular Basis of Inflammation and Infection (PATH3205), as part of the Pathology specialization within the Medical Science degree program at the University of New South Wales (UNSW) Australia, were asked to create an ePortfolio with WordPress. Use of WordPress as an ePortfolio blog facilitated and supported self-directed learning and reflective practice. As part of the self-directed learning process, students posted images of disease that reflected their view of pathology. These images not only appealed to the students in terms of their understanding and

interpretation of content matter, but also suggested a professional self that they could identify with. An interesting aspect of this process is the self-directed journey for students starting to build their professional identity even as undergraduates. Science students often engage well with content-specific knowledge, a key requirement of learning Pathology. However, as a key aspect of developing skills in research practice within the Pathology discipline, students started to delve deeper into what these new skills meant to their professional development, and ultimately, identity as medical scientists (Polly et al, 2015).

Teacher Education Student Perspective

As students enter the Bachelor of Education, Early Childhood and Primary degree program at Charles Sturt University, they begin their ePortfolio with a task that requires them to find or create images of themselves as future educators and then to discuss the images; the images may be literal, metaphoric, or symbolic. Throughout the degree program, the students (i.e., pre-service teachers) continue with their ePortfolios through various processes of assessment, development, reflection, and showcasing (Stefani et al., 2007). In their final year, the pre-service teachers are asked again to find or create images to reflect pending professional selves. The pre-professional students give this activity much thought, and contrasts are made to the initial images discussed several years earlier, with marked changes in outlook and learning. Figure 6 shows an example of a fourth-year image prior to the final professional practicum and graduation. The following pre-service teacher considered deeply how she could depict in an image the multitude of feelings and ideas to explain her individual situation in regard to learning and her future:

> The image . . . represents myself on my educational journey. The bottom of the image where I am lying represents my four years of university, that I am looking back on. The road ahead represents my future career, a long road into unknown territory. (Charles Sturt University student, 2015)

The image facilitated further discussion regarding the personal history of the student and the particular qualities she recognized with regard to positive professional attributes; it also provided an opportunity for discussion of a specific example of expertise whilst on a past professional practicum, which had been a unique experience that she felt made her more valuable as a future teacher. Within a showcase ePortfolio, this student was able to make a very strong statement to a prospective employer regarding her positive attributes and her accumulated expertise:

> I believe I am an intellectually capable, culturally sensitive, compassionate, and contemporary teacher. I am a teacher who strongly values communities, a team player, and I understand the contribution I can make to add to the cultural capital of communities beyond direct teaching. (Charles Sturt University student, 2015)

As Bailey and Van Harken (2014) concluded, this pre-service teacher "was making important connections that were generative and reflective. In doing so, she took a giant step forward in her understanding of what good teaching should be as a result of her own effective data analysis" (p. 256).

Music Teacher Education Student Perspective

Musicians who are preparing to be music teachers in the Bachelor of Music, Music Education program at the University of Sydney were introduced to a student-created ePortfolio, over a four-year period, through a research-funded project by the University of Sydney Teaching Improvement and Equipment Scheme grant. The project aimed specifically to embed a range of ePortfolio tasks across the four-year degree program in an incremental manner that ensured longevity (Rowley, 2011). The first portfolio task for students was to create a metaphor for teaching whilst undertaking the introduction to teaching course—Fundamentals of Music Teaching and Learning (MUED 1008). This entailed working as a group and creating an electronic poster that was then defended in an assessed seminar presentation. It was a challenging task, engaging students in peer learning, information technology (IT) manipulation, and self-reflection as they had to design and create the metaphor into an electronic poster. Figure 7 shows one example of the graphical metaphor that a student perceived as a metaphor for music teaching. The old doorway symbolizes for this student a need to enter and exit throughout a teaching career and to be aware that past, present, and new pathways can contribute to future development as career professionals. He wrote, "We are like keys opening the door for students to learn" (University of Sydney student, 2014).

For many students, the task of graphically capturing their metaphors for teaching challenged their concept of future possible selves, and the electronic posters produced reactions to their learning to be music teachers based on how to present themselves as music educators, both in schools and in other settings (e.g., private studios, community groups, ensembles). Students agreed that philosophical statements of their beliefs in music education were an essential component of an ePortfolio, in addition to the metaphor for teaching music. As one student commented, "[You

Figure 6
Photograph by Stephanie Clark

Note. Image provided in a final year ePortfolio using metaphor and symbols to illustrate readiness for the profession of teaching.

Figure 7
Image from a Student ePortfolio

Note. This image symbolizes a need to enter and exit learning, as a metaphor within a future professional career.

Figure 8
Poster From a Student ePortfolio

Note. This poster, from a student ePortfolio, shows the complex thinking of this particular student in regard to where and how teaching is a metaphor for navigating a complex set of rules such as learning to drive a car.

could include] lots of different things that show your diversity." Figure 8 shows the complex thinking of this particular student in regard to where and how teaching is a metaphor for navigating a complex set of rules, such as learning to drive a car.

In relation to this assessment that was peer reviewed as well as assessed by staff, students debated whether staff or students should assess ePortfolios. Finally, it was agreed that peers best reviewed this metaphor task and that this would work in everyone's favor: One student commented, "Everyone can have a look at everyone else's, and that's what people will be doing . . . looking at it . . . and that way you get other ideas" (University of Sydney student, 2014).

Overall, music education students saw the functionality of an ePortfolio to present multi-faceted representations of themselves through a range of digital media (e.g., electronic posters, audio files, documents, images, diagrams) in the one electronic location as advantageous. They saw this as an outcome of, and supportive of, the increasing technologizing of education in general and of music education specifically, noting that a good ePortfolio could show a person's technological skills to advantage.

With regard to the "sense of self" model depicted in Figure 1 (Rowley & Munday, 2014), the pre-professional students beginning their academic studies are extrinsically motivated to work on their ePortfolios; however, the personal nature of the task aligns with their self-concepts and assists with enhancing their self-images. In their final years, their motivations have become intrinsic as they move closer to professional practices and their views of themselves as ideal-selves.

The academic teachers and curriculum designers who were symposium participants in the 2015 national symposium professional learning workshop were intrinsically motivated to attend, since they had chosen from a number of alternative events being held at the same time. However, in regard to the "sense of self" model, they were extrinsically required to undertake the activity, which did ask them to consider their self-concepts in relation to images and their professional work. Through the resulting discussion of the created images and their relationships through metaphor, the symposium workshop participants rapidly worked their way through the model in a self-determined manner.

Conclusion

The use of visual images in a portfolio can be regarded as a complementary strategy to the suite of strategies academic teachers are currently using for developing a student's sense of self. Similar positive outcomes to those demonstrated and discussed in this article can be achieved through explicit discussions that academics can have to adjust their curriculum and to utilize the metaphoric or literal images with their students within other processes they undertake with ePortfolio practice. As students look to their future selves through the lens of pre-professionals, they are more likely to visualize themselves as competent in a range of skills. The outcomes of the national symposium workshop processes and the embedded design in the three example undergraduate degrees show the need to continue the dialogue with academic colleagues to encourage reflection on the portfolio process rather than getting caught in the void of technology. Developing our degree students' digital literacies is in fact developing their literacy skills, which contributes to a holistic view of themselves as practitioners. In a way, as degree students see themselves more clearly as professionals (e.g., nurses, teachers, scientists, engineers), they see value in their studies and start to engage in higher levels of thinking

with subject matter—it becomes purposeful. The authors have noted that students' reflection on themselves as competent pre-professionals in their disciplines within the ePortfolio achieves a level of the graduate attributes and learning outcomes that universities and higher education strive to achieve over the journey of a student's degree program.

Our previous research study, which included the webinar series, and the national symposium workshops were intentionally provocative in contexts and applications, and demonstrated uses of the visual image for promoting a sense of self. The processes of ePortfolio for a varied and diverse range of purposes in teaching and learning across all disciplines allows for greater interaction with subject specific knowledge and for engaging in higher order thinking processes. Many of the uses for the visual image described in this article replicate the viabilities of ePortfolios for submission and assessment of students' work and encourage collaborative peer interaction. It is a key point that for success in the development of the professional self that pre-professional students, as well as academics, need to understand self-promotion in professional settings. In the journey for any professional towards accreditation, the ePortfolio can be seen as a useful process for archiving and curating an individual's learning as well as promoting and showcasing high quality achievements. The authors see the portfolio as a tool for a longitudinal representation of the outcomes of an academic program, as an influence on curriculum design and renewal, and as a method for promoting reflective practice. These are all key strategies for academics as they navigate the journey of a student's development as a professional practitioner, and ePortfolio creation through the use of a visual image can encourage this self-realization and reflection.

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Building Personal Brands with Digital Storytelling ePortfolios

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Antoine de Saint-Exupery said, "If you want to build a ship, don't drum up people to collect wood and don't assign them tasks and work, but rather teach them to long for the endless immensity of the sea." This article presents a pedagogical approach for framing a digital-identity-enhancing ePortfolio that maximizes student engagement and produces a high-quality ePortfolio artifact. Building on the work of Lambert (2002), Barrett (2005), Klein (2013), Ramirez (2011), Nguyen (2013), Kahn (2014), Khedher (2014) and others, the authors have developed a technology- and pedagogy-based digital storytelling ePortfolio framework that helps students craft a digital identity and communicate a personal brand. When ePortfolio assignments provide opportunities for self-exploration that include creating a personal brand, students engage with and appreciate the importance of their work, as evidenced in our pilot study of second- through fourth-year students in a university honors colloquium. Furthermore, this personal branding approach extends existing ePortfolio models by helping students develop key twenty-first century metaskills (Neumeier, 2013), while also enhancing their human and social capital.

In the last two decades, the use of ePortfolios to foster and assess learning in courses, programs, and across institutions has flourished. A recent editorial by Rhodes, Chen, Watson, and Garrison (2014) in the *International Journal of ePortfolio* reports that more than 40% of colleges and universities use ePortfolios in some way. The expanding use of ePortfolios can be attributed to a confluence of factors affecting higher education, including the need to update pedagogical methods to better address the participatory learning preferences of 21st century students, increased access to Web 2.0 technologies (e.g., mobile computing devices, social media platforms, wireless connectivity) that support participatory learning, as well as calls for colleges and universities to provide clear evidence of what students learn (Bass, 2012, 2013; Clark & Eynon, 2009). ePortfolios, in which students document, reflect on, and integrate their learning in digital spaces, often for public audiences, are especially suited to meet these demands.

As virtually all published accounts of ePortfolio use make clear, their success, whether to foster deep learning or to facilitate more authentic assessment, depends on how ePortfolios are implemented (Eynon, Gambino, & Török, 2014a). Early research suggests that the adoption of ePortfolios has helped institutions meet objectives such as increasing retention and improving assessment of learning (Eynon, Gambino, & Török, 2014b). Faculty, too, report that the use of ePortfolios in their courses has facilitated deeper learning for students. Unfortunately, students themselves may not see ePortfolios as positively as do teachers and administrators. The 2014 ECAR Study of Undergraduate Students and Information Technology found that ePortfolios were one of only two technologies (the other was social media) that students wished teachers would use less of (Dahlstrom, Brooks, & Bischel, 2014).

That institutional interest in ePortfolios may conflict with students' interests was addressed early by ePortfolio advocates Barrett and Carney (2005), who questioned whether, in the name of assessment, we might be losing a "powerful tool to support deep learning" (para. 5). Batson (2007) used the word "hijacked" to describe the appropriation of ePortfolios for purposes other than student-centered learning. Although Cambridge (2010) and others have argued that ePortfolios can serve both institutional and student interests, the case remains that, as with any requirement, ePortfolios risk being seen by students as *merely* a requirement. For ePortfolios to be of maximum value, faculty should take into consideration not just course learning outcomes but also students' interests in creating portfolios.

When ePortfolio creation is motivated by students' desire to showcase their capabilities for potential employers, graduate school admission counselors, or some external audience, students respond much more enthusiastically. Fortunately, if the assignment is structured well, a showcase portfolio can still serve multiple purposes, resulting in what is often referred to as a hybrid ePortfolio. For example, a hybrid portfolio can not only showcase student achievement but also function as an assessment portfolio by capturing the key competencies needed for institutional, programmatic, or course evaluation. Importantly, students who produce a portfolio for an external audience in addition to an internal audience put forth more effort and produce better outcomes, expecting that others might view, evaluate, use, or even cite their work (Hubert, Pickavance, & Hyberger, 2015; Ramirez, 2011).

Literature Review

Digital Identity

In recent years, there has been an expanded interest in examining the role of ePortfolio in identity formation,

helping students develop a sense of self as a learner and future professional, based on their values, beliefs, accomplishments, and needs (Belshaw, 2012, Kehoe & Goudzwaard, 2015; Klein, 2013, Nguyen, 2013, Ramirez, 2011). Several authors exploring identity have cited Goffman (1959) who considered identity as s a view of self that is constructed by the performance the individual gives in front of others (Buckingham, 2008; Code, 2013; Jenkins, 2004; Koole & Parchoma, 2013). This performance is a product of biography, the social context, and the people an individual interacts with (Buckingham, 2008). ePortfolios can facilitate student identity formation as they engage in the process of reflection and self-authoring. ePortfolios likewise contribute to the shaping of one's *digital identity*, or who a person is assumed to be based on the permanent collection of a person's data that is available online. Williams, Fleming, Lundqvist, and Parslow (2013) described digital identity as "a persona an individual presents across all the digital communities that he/she is represented in" (p. 106). It "reflects how the individual is viewed, and thus impacts on the way they work and their reputation within their communities" (Williams et al., 2013, p. 106). As digital identities become increasingly complex and scattered across the web, an ePortfolio can be a valuable means of bringing coherence to the digital self an individual presents. Through reflection and self-authorship, students can craft a compelling narrative based on their values, beliefs, and experiences. However, given students' increased motivation when composing for an external audience (Hubert et al., 2015; Ramirez, 2011), a more appealing approach to an ePortfolio might be to ask students to build their personal brand rather than digital identity.

Personal Brand

Less than two decades ago, Peters (1997) started the conversation about personal branding with a book called *The Brand Called You*, leading to a stream of publications, magazines, websites, training programs, and training coaches aimed at job seekers and young people in general (e.g., Arruda & Dixson, 2007; Chritton, 2012; McNally & Speak, 2002; Montoya, 2002; Schwabel, 2009). These resources offer advice and tool-kits to help people build personal brands and, consequently, "gain influence as others may view you as effective, well-connected, powerful, knowledgeable, and up to date" (Hernez-Broome, McLaughlin, & Trovas, 2009, p. 20), which can lead to advancing one's position in the labor market. According to Du Gay (1996), a personal brand has a return in terms of human, social, and ultimately, economic capital development. Given the educational and practical relevance of developing a personal brand, branding principles have already made their way into some undergraduate and graduate curricula (e.g., Wetsch, 2012).

A brand evokes an emotional response to the image or name of a particular company, product, or person (Deckers & Lacey, 2011). The development of a personal brand, if it is to be similarly compelling to an audience, requires an understanding of one's current professional identity, a formation of targeted communications for external audiences, and an understanding of effective channels for communication with the target audience (Ward & Yates, 2013), followed by a subsequent evaluation of how well the image created is fulfilling one's goals (Khedher, 2014). The fear is that if one does not manage one's personal brand effectively, someone else might do it for them (Rampersad, 2008; Solove, 2008). Like product brands, personal branding also requires positioning one's brand in a different way than the competition, while doing it with integrity, authenticity, and consistency (Ward & Yates, 2013). Taking into account a person's values, beliefs, and needs, a personal brand typically includes a mission and vision statement, a brand statement, and tagline, clearly distinguishing one's brand from one's identity. A strong personal brand relies on a strong online presence that communicates the brand elements and authentically reflects an individual's strengths, beliefs, and aspirations. Labrecque, Markos, and Milne (2011) observe that "in the age of Web 2.0, self-branding tactics involve creating and maintaining social and networking profiles, personal websites, and blogs, as well as using search engine optimization techniques to encourage access to one's information" (p. 39.) Because robust personal branding relies not only on impression management (Cunningham, 2013) but also on a narrative, bringing storytellin*g* elements to one's brand building is important to personal branding success.

Storytelling

Humans have long used stories to make sense of their experience and to communicate the significance of that experience to others. Stories add purpose, meaning and value to life. They entertain, facilitate understanding, help us find connections between ideas, and motivate action. While historians, philosophers, anthropologists, and literary critics have studied the ways in which narratives convey human values, more recently, scholars have suggested that narrative structures are also key to processing, storing, and retrieving information. Bruner (1991) has observed "that narrative comprehension is among the earliest powers of mind to appear in the young child and among the most widely used forms of organizing human experience" (p. 9). Schank (1990), an artificial intelligence researcher, argued similarly:

People think in terms of stories. They understand the world in terms of stories that they have already

Table 1
Telling Your Digital Story (Leverenz, 2014)

Digital storytelling element (Lambert,2002)	Explanation
1. Point of view	"The main point of the story and the perspective of the author in relation to the story."
2. A dramatic question	"A key question that keeps the viewer's attention and will be answered by the end of the story."
3. Emotional content	"Serious issues that come alive in a personal and powerful way and connect the audience emotionally to the story."
4. The gift of your voice	"A way to personalize the story to help the audience understand the context and to get a stronger sense of the person behind the story."
5. The power of the soundtrack	"Music or other sounds that support and embellish the story."
6. Economy	"Using just enough content to tell the story without overloading the viewer."
7. Pacing	"The rhythm of the story and how slowly or quickly it progresses."

understood. New events or problems are understood by reference to old previously understood stories and explained to others by the use of stories. We understand personal problems and relationships between people through stories that typify those situations. We also understand just about everything else this way as well. (p. 219)

While there is not yet clear agreement on why our brains have evolved to be particularly attuned to narrative, there is little question that the human capacity for storytelling has played an important role in our evolution as a species. It is not surprising, then, that reading, writing, telling, and listening to stories have become valuable educational practices. Stories enable us both to know and to express what we know. We might even say that when we compose a narrative, whether in an effort to understand ourselves or others, we are not simply reflecting reality but creating it (Bruner, 1991, p. 13). As Bruner (1991) reminds us, storytelling involves selecting and ordering information, an act that necessarily involves interpretation. As such, "some measure of agency is always present in narrative, and agency presupposes choice—some element of 'freedom'" (Bruner, 1991, p. 7). While all stories, from the simplest picture book to the most complex historical treatise, share the essential features of characters situated in a specific context who engage in action over time in order to solve a problem or resolve a conflict, it is we who decide what story we want to tell.

Digital Storytelling

With the advent of personal computing, digital cameras, and more recently, Web 2.0 tools and mobile devices, digital storytelling has gained in widespread popularity (Abrahamson, 1998; Alexander, 2011; Benmayor, 2008; Bernard, 2006; Coventry, 2008;

Fletcher & Cambre, 2009; Jenkins & Lonsdale, 2007; McDrury & Alterio, 2003; Oppermann, 2008; Porter, 2004; Ramist, Doerr-Stevens, & Jacobs, 2010; Robin, 2006, 2008; Yang & Wu, 2012). Principles of digital storytelling such as those promoted by Lambert (2002), founder of Storycenter (formerly the Center for Digital Storytelling), bring together narrative strategies and digital media to help people share their experiences. While digital storytelling typically refers to a brief, emotionally compelling, video-based narrative, created through an assemblage of still images, video clips, music, and voice-over narration, we use the term here to refer to the more conceptual elements of a digital story, namely, that it engages an audience through an intentionally arranged description of events over time and that it does so digitally, using multiple modes of expression. Digital media add richness to the story as well as shape the story, benefiting the reflection and the emotional impact the story delivers. Digital stories require mastering not only the storytelling craft but also the technologies needed to deliver effectively elements of digital storytelling, such as those recommended by Lambert (2002) and presented in Table 1.

Digital storytelling promotes the development of competences such as research and writing skills, organization skills, technology skills, presentation skills, interpersonal skills, problem-solving skills, and critical thinking. In turn, students also develop digital literacy, technology literacy, visual literacy, and information literacy (Bass & Oppermann, 2005, Cradler, McNabb, Freeman, & Burchett, 2002; Robin 2006). Because digital storytelling involves an interdisciplinary integration of critical thought and creative practice, it has been hailed by many as a signature pedagogy of the *New Humanities* (Benmayor, 2008). When students use digital storytelling, they learn to "convert data into information and transform information into knowledge" (Cradler et al., 2002, p. 3).

Proponents of digital storytelling have found that students' investment in creating a compelling story and the challenge of doing so using unfamiliar modes and technologies can help them meet designated learning outcomes. Such benefits can also extend to students who engage in digital storytelling in the context of an ePortfolio. Unfortunately, without explicit guidance on how to use an ePortfolio to tell an effective story, students may treat the construction of a portfolio as merely a hoop to jump through.

Digital Storytelling ePortfolios

As early as 2005, teacher and teacher educator Barrett demonstrated how digital storytelling and ePortfolios together enhance classroom learning. Our approach to ePortfolios, which emphasized digital storytelling for the purpose of creating and communicating a personal brand, directly extends prior research. Following Bruner (1991), when students use portfolios to tell a story about their learning, they are not merely reflecting on their learning but actively creating a world in which they play the lead role. Informed by narrative theorist Paul Ricoeur's (1991) belief in the significance of expressing our lives through stories, Nguyen (2013) saw students' portfolios as providing evidence that "life is a series of events that gain meaning when configured in narrative" (p. 139). In the portfolios Nguyen (2013) analyzed, she identified three themes: (a) that portfolios functioned as "a sharable narrative of identity, in conjunction with others" (p. 139); (b) that the construction of portfolios resulted in "new understandings of the self" (p. 139); and (c) that telling the story of their past enabled students to better imagine their future. Digital Storytelling ePortfolios are further grounded in the work of Ramirez (2011), Klein (2013), and Kahn (2014). Ramirez's (2011) research looked at ePortolio crafting as an ePerformance, presenting a portfolio persona, while Klein (2013) proposed the social ePortfolio as a new concept of professional presentation. Finally, Kahn (2014) advocated for multi-modal ePortfolios to develop 21st century skills. In our view, approaching ePortfolios as a digital story is one way of connecting the instructor's goal of using ePortfolios to deepen learning and students' interest in creating a compelling representation of self and brand for a potential audience outside the class.

Our Digital Storytelling ePortfolio approach is also consistent with prior literature that identified strategies for increasing students' engagement in ePortfolio production. These strategies include (a) giving students a sense of ownership over their ePortfolios (Clark & Eynon, 2009; Klein, 2013; Ring, Weaver, & Jones, 2008; Yancey, 2009), as both the freedom to select what is included and choice in the visual components of ePortfolios appeal to students' interest in creative self-expression; (b) helping students see ePortfolios as a space for self-authorship and identity formation (Cambridge, 2010; Klein, 2013; Nguyen, 2013; Ramirez, 2011; Yancey, 2013); (c) maximizing ePortfolios as a form of social pedagogy (Bass, 2014; Eynon et al., 2014a; Klein, 2013; Nguyen, 2013; Ramirez, 2011); and (d) taking advantage of the digital affordances of ePortfolios to encourage the development of 21st century communication skills (Bass, 2012; Clark & Eynon, 2009; Gallagher & Poklop, 2014; Kahn, 2014; Klein, 2013). Increased student engagement in ePortfolio creation can lead both to better learning and to the development of a more compelling personal brand.

Method

Our goal in this article is to describe a pedagogical approach to ePortfolios focused on building a strong personal brand within a framework of digital storytelling. While the applicability of our pedagogical method to other settings has not yet been tested, our preliminary findings from an admittedly limited study indicate that the approach generates desirable learning outcomes and promises to deliver additional benefits for students and faculty. The pedagogical approach presented below is the result of a year's worth of instructional tinkering by the authors at Texas Christian University (TCU). In the fall of 2013, TCU began an ePortfolio pilot program, and one of the authors involved in the pilot adopted an ePortfolio assignment in lieu of a final exam in her upper-level honors colloquium called the Disruptive Nature of Information Technology. While the honors students successfully completed the semester-long reflective ePortfolios, which emphasized integrative learning, their level of enthusiasm for the project was mixed, with some of the students understanding the value of the exercise and others just completing the work half-heartedly for the grade. The overall perception of the ePortfolio as documented in anonymous student evaluations was that it was an unnecessary add-on to the course. Informal conversations with students led the instructor to revise the assignment for a subsequent honors colloquium taught in the spring of 2014, Digital Identity and Digital Storytelling Across Disciplines. The spring 2014 colloquium focused on students' building of a personal brand, using project-based learning pedagogy, with each week's activities concentrating on the development of students' better understanding of their identities, digital identities, personal brands, and potential for digital storytelling, Rather than asking the students to construct a learning portfolio for an internal audience, the instructor asked students to develop a showcase portfolio for an external audience, as
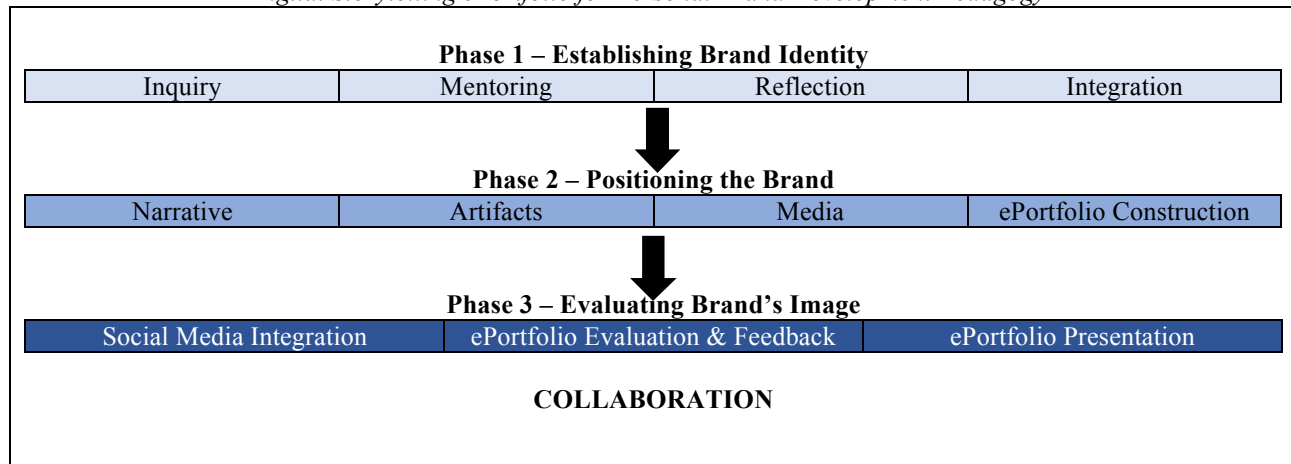
appropriate for each student, either a graduate school counselor or a potential employer, depending on their future plans. Many aspects of the ePortfolio assignment in both courses remained the same. For example, in both courses, students were presented with ePortfolio template pages from TCU's pilot FrogFolio (Appendix A) and were asked to respond to all the prompts contained within it. In the second iteration of the course, however, the instructor developed worksheets (Appendices B and C) intended to help students meet the additional requirements of the specific course evaluation rubric (Appendix D). The weighing of the grades for the ePortfolio project in the two courses also differed. In the fall of 2013 the ePortfolio as a final exam was worth approximately 25% of the student grade, while in the spring of 2014 the portfolio counted as 40% of the grade.

In both courses, the students were high-achieving, traditional age, sophomore-through-senior level honors students, representing various colleges and schools across the university. Each class had sixteen students, with approximately 30% male and 70% female students. The major difference between the two courses was the pedagogical approach. In the spring of 2014, the instructor was intentional throughout the entire course in helping students develop a personal brand within a digital storytelling ePortfolio. We present the approach and its results below.

Pedagogy

To help students build strong personal brands within the context of their ePortfolios, faculty must guide students to discover their current professional identities, examine their digital identities, and craft compelling digital stories for their target audiences. Notably,

students need guidance in the self-exploration process as well as in the process of composing their digital stories and brand communications. Figure 1 presents a framework for our spring 2014 Digital Storytelling/Personal Brand Development approach to ePortfolios that can help faculty understand the pedagogy of building a strong personal brand with an ePortfolio.

Informed by the personal brand development model of Khedher (2014), our framework identifies the variety of tasks students complete in crafting their ePortfolios and the roles that faculty play in guiding them. Importantly, our framework is meant to extend rather than replace previous comprehensive ePortfolio models (e.g., Cambridge, Cambridge, & Yancey, 2009; Eynon et al., 2014a; Peet et al., 2011; Penny Light, Chen, & Ittelson, 2012; Reynolds & Patton, 2014; Zubizarreta, 2009). The pedagogy framework consists of three phases, each one explained below.

Phase 1: Establishing brand identity. The establishment of a student's brand identity involves inquiry, mentoring, reflection and integration in a collaborative environment.

Inquiry. With the assistance of the course materials, peers and family, students begin a process of self-inquiry to determine what they value, what they are good at, and what they aspire to, with a goal of crafting a career vision and an accompanying set of needed professional goals and competencies. Faculty might ask students to complete assignments involving personality tests, such as Myers-Briggs Type Indicator (Myers & Myers, 1995), StrentgthsQuest (Anderson, 2004), or Reflected Best Self exercise (Roberts, Dutton, Spreitzer, Heaphy, & Quinn, 2005), or complete a personal SWOT analysis (Vallas & Cummins, 2015). All our students completed StrengthsQuest and the Reflected Best Self exercise during spring 2014.

Mentoring. Faculty meet with each student to listen and help everyone successfully develop a career vision and a set of related professional competencies needed to achieve their career vision. Students often need a sounding board and an interpreter to help them sift through the sea of data about themselves and make meaning of it. The professor met with each student at least twice during the spring 2014 semester. One meeting was dedicated specifically to developing a career vision.

Reflection. As students reflect on where they are in their career journey, what they have already done, and what they need to accomplish in the near and distant future to move toward their goals, faculty assist them in the critical thinking process, seeking career resources as needed. During the mentoring meetings, student reflection often required the instructor to find additional campus resources for the student such as career services, assessment tools, and alumni contacts.

Integration. Students integrate their understanding of self, their values and accomplishments in order to develop elements of their personal brand that include mission, vision, brand statement, and tagline for their target audience (see Appendix B, Personal Brand Worksheet, for helpful prompts). Faculty might wish to review drafts of the completed worksheet and provide individualized feedback to each student.

Phase 2: Positioning the brand. Positioning the brand involves narrative development, artifact selection, media selection, and digital story construction within the ePortfolio. This phase also benefits from a collaborative approach with peers and/or formative feedback from faculty.

Narrative development. Students begin to develop their personal narrative, beginning with their About Me page, followed by goals and learning experiences, incorporating personal brand elements into their story (see Appendix C, the Story of Me worksheet, for helpful elements to include in the narrative). As Wee and Brooks (2010) suggested,

> In the case of personal branding strategies, the actor is expected to present a self that is constantly working on itself, to better itself and its own relationships with others, all the while demonstrating its behaviors are reflections of an authentically unique personality. (p. 56)

The faculty might wish to review the narrative drafts and personal brand worksheets for consistency in the story students are telling about themselves.

Artifact selection. To support their narrative arguments, students present electronic artifacts of their work with appropriate reflections, showcasing their development towards desired competencies and goals. The artifacts might include quotes, essays, photos, slideshows, videos, class projects, and other digital media. The faculty will eventually review whether the artifacts and corresponding reflections appropriately relate to the desired competency development.

Media selection. To make the portfolio visually appealing, students select appropriate media for each of the portfolio pages. The faculty will eventually provide feedback on the aesthetics of the ePortfolio pages.

Digital construction. Students construct the pages using web design and new media writing guidelines, incorporating the narrative, the artifacts, and various multimedia into their portfolio pages. Faculty can assist students by providing helpful resources such as exemplar portfolios, lists of helpful digital tools, and templates with guiding, general prompts for the assignment. Faculty will eventually assess whether the pages constructed follow web design and new media writing guidelines while capturing the planned narrative using appropriate artifacts and media, and evoking the desired response.

Phase 3: Evaluating the brand's image. Evaluating the brand's image involves social media integration, evaluation, and feedback by relevant, available ePortfolio stakeholders, and a formal presentation of the ePortfolio.

Social media integration. Students obtain feedback on their social media presence from peers and incorporate their pertinent social media platforms into the portfolio narrative. A workshop on how to use LinkedIn or a similar platform can help students who are not yet active in a professional network build a professional presence. Given that (a) "social media enables identity expression, exploration, and experimentation" (Code, 2013, p. 37), (b) nearly two-thirds of adults use social media (Pew Internet Research, 2015), and (c) 45% of employers use social media to research candidates (Grasz, 2009), with search streams of attributes, it is key to connect ePortfolio to pertinent professional social media platforms in order to further ePortfolio impact.

Evaluation and feedback. Students obtain feedback on the portfolio from peers, faculty and external stakeholders and revise, as needed. Faculty provide a helpful portfolio evaluation rubric to assist students in self-evaluation of their work. Since "identity formation is a complex, iterative, and continual process" (Koole & Parchoma, 2013), it is critical to involve students in interaction, dialogue, and reflection around their ePortfolio work, so that they can engage in "a recursive construction and deconstruction of identity" (Christensen, 2003, p. 24). A professional social media presence enables students to engage directly with recruiters and seek feedback on their portfolios.

Presentation. Students present their portfolio to faculty, peers, and target audience, offering a rationale for the ePortfolio they built, artifacts selected, and reflections included, thus showing intentionality of effort.

Figure 2
Personal Digital Brand Technologies
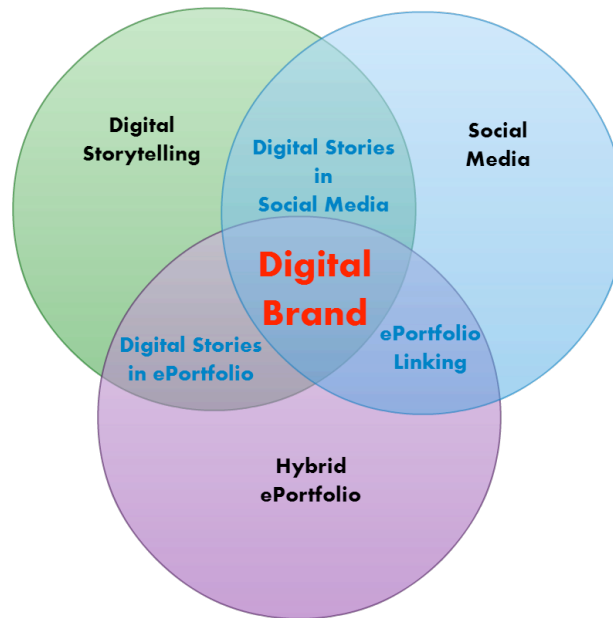
Throughout the entire process, students collaborate with various individuals, such as peers, faculty, or family members, and potential target audience members, to complete a task or seek guidance, as constructing a digital brand requires an understanding of how the information we present is perceived by others. The pedagogical framework presented above requires faculty to understand the technologies used in the creation of a personal brand, as presented in Figure 2. Figure 2 stipulates that faculty members guiding students on their personal branding journey need to know the capabilities of the web platform used to create the student ePortfolio, as well as the role that social media and Web 2.0 digital storytelling tools can play in the production of an effective digital brand. While faculty proficiency with all the tools is not required, guiding students toward helpful technology resources is critical so that students can develop an appreciation for how their choice of different platforms and digital tools can help them differentiate themselves and be effective as storytellers. We have created a digital portfolio about creating digital storytelling ePortfolios, called Composing Digital Portfolios: Best Practices From Digital Storytelling (Leverenz, 2014), which introduces students to our unique approach, offers answers to common student questions, showcases best practices, and presents further resources. Students in the Fall 2013 course were invited to evaluate our instructional portfolio according to the seven principles of digital storytelling, and we subsequently revised in response to their feedback in order to make our exemplar ePortfolio more effective for the spring 2014 students.

Table 2 presents key digital brand content that could be integrated in a digital brand ePortfolio to help students tell an authentic and credible story. Such content could include links to student profiles in professional directories, authored content (e.g., papers, presentations, websites, blogs, other portfolios, and media), communications (e.g., social media posts, community participation), and professional network content.

Evaluation

To assess the effectiveness of our digital storytelling approach to ePortfolio development in this pilot study, we used multiple forms of data. Our analysis included a study of student perceptions of the ePortfolio platform and an assessment of their personal brand ePortfolio artifacts developed in the course. To examine student perceptions, we used a pre- and post-class survey (see Appendix E) developed at TCU by the ePortfolio pilot team and administered to all the students participating in the 2013-2014 ePortfolio pilot. To assess the student portfolios, we used a rubric (see Appendix D) developed by the faculty member

Table 2
Key Digital Brand Content

Key Digital Brand Content			
Profiles	Authored content	Communications	Networks
• Directory Information • Search Results	• Papers & Publications • Presentations • Websites • Blogs • Portfolios • Digital Stories • Media • Bookmarks	• Social Media Posts • Community Participation	• Professional Affiliations • Connections • Endorsements

teaching the course and based on the key learning outcomes of the project. Additionally, we solicited further validation for our work from external stakeholders. We present below the results of our data analysis and the feedback we received.

The students enrolled in the course completed a short survey on the first and last day of the course. The survey presented eight questions using a Likert scale response and seven open-ended questions. After the semester was over, we used paired t-tests of students' responses before and after the course, to determine if student perceptions had changed. The data suggests that students' agreement with the survey statements had significantly improved ($n = 16$). At the end of the course, 100% of students either agreed or strongly agreed with all eight prompts presented. We found statistically significant differences in student perceptions regarding ePortfolio, learning and digital identity pre- and post-course at the .01 level. Table 3 presents pre- and post-test mean survey responses in the spring 2014 class. Notably, students indicated in their post-tests that the course had enhanced (a) appreciation of their ePortfolios; (b) their ability to connect knowledge with learning experiences, passions, and goals; (c) their belief in ePortfolio's contribution to understanding of self; and (d) their need to maintain a digital identity. Following are a representative sample of students' final comments about the Digital Storytelling ePortfolio project from the open-ended questions at the end of the survey:

- "ePortfolio allowed me to make life connections and form professional, clear-cut definition of who I am as a person and as a professional."
- "The ePortfolio helped me realize how my learning is not compartmentalized, but is ever-flowing and crosses over into all areas of my life."
- "The ePortfolio helped me form a mission and vision statement in order to figure out my career path and hopefully gain a competitive advantage in the job market."

To assess the quality of students' learning as presented in their portfolios, we conducted a summative evaluation of all students' work with the same rubric we used for formative assessment (Appendix D). The instructor reviewed all the students' work twice: once during their presentation and again outside of the class environment, to make sure no details were missed. The faculty assessment yielded an average ePortfolio class score of 96.7%, with the range of 91% to 100% across all 16 students. We are confident that the pedagogy, when implemented as described, yields not only a high level of student satisfaction, but also high quality ePortfolios capturing students' identities, digital brands, and important learning.

Additionally, many of the sixteen student portfolios developed in the spring 2014 course have also received external recognition. Numerous students received awards at the TCU ePortfolio Showcases over subsequent semesters. Most notably, the portfolio of Paige Weishaar (see Figure 3) won the "Best Portfolio" recognition of the spring 2014 TCU Showcase and is one of the four ePortfolios featured on the Digication.com homepage. To-date, her portfolio has received over 35,000 views. Having developed a stellar portfolio as well as an understanding of the pedagogies and technologies surrounding portfolio work, Paige became a student intern in the TCU ePortfolio program, helping other students develop their portfolios. Paige's learning reflection at a regional AAEEBL conference included the following testimonial for the approach we present (Jones & Weishaar, 2016),

By doing some initial reflection and soul-searching, I was able to better understand what makes me, me, as well as define my own personal brand and tagline. This branding became crucial when composing my digital story, helping to direct every decision I made when creating my ePortfolio. In short, if it didn't support my personal brand or my future goals or ambitions, I didn't add it.

Table 3
Pre- and Post-Course Student Perceptions of ePortfolios and Digital Identity

Prompt	Average Pre-Test Response	Average Post-Test Response
I understand the purpose and potential uses of ePortfolios to contribute to my growth as a learner and the development of my professional digital identity.	3.88	4.63
I can identity and provide specific examples of the knowledge and skills I've gained from different types of learning experiences.	3.56	4.63
I understand the importance of connecting the knowledge I've gained from one place to other situations.	4.19	4.94
I understand and can demonstrate how my varied learning experiences are connected to certain desired learning outcomes of the university.	3.53	4.75
I can demonstrate the knowledge/skills I've gained from pursuing an area of study, or engaging in a series of actions, that reflect my passions and interests.	3.75	4.69
I can identify significant, impactful learning experiences both inside and outside the classroom, and thoughtfully reflect upon how those experiences have shaped/changed my understanding of self, others, and/or the world.	4.00	4.75
I understand the need to develop a professional digital identity that is distinct from a typical Facebook, LinkedIn, or similar online identity.	4.19	4.81
I believe it is important to develop and maintain a professional digital identity that demonstrates my knowledge, skills, values, goals and contributions to the human community.	4.38	4.84

The social media audit exercise was very helpful, too, as it allowed me to take a step back and see, through another individual's eyes, how I am already perceived online. If you didn't like what you saw, you had the opportunity to refine the way you presented yourself, or you could use that experience as a precursor towards telling your digital story.

All of these parts and pieces led to the showcase displayed in Figure 3.

Discussion

Based on these formal and informal assessments by students, faculty, and external stakeholders, we determined that our Digital Storytelling ePortfolio pedagogy focused on personal branding was effective in achieving our goals of enhanced student learning and increased student engagement. The effectiveness of this approach, we believe, resulted from shifting the focus for students from creating a semester-end integrated learning portfolios to engaging in a semester-long process of developing a showcase portfolio that captures their personal brands. With this approach, students did not perceive the task of ePortfolio construction as mundane but instead embraced it as an important part of their life's journey. In addition to increasing student engagement, this focus on personal branding and digital storytelling in the context of ePortfolios has the added benefit of enabling students to develop key relevant twenty-first century skills.

We live in an age of accelerating innovation and disruption. From bionics, through cognitive computing,

Figure 3
Sample Digital Storytelling ePortfolio from Paige Weishaar
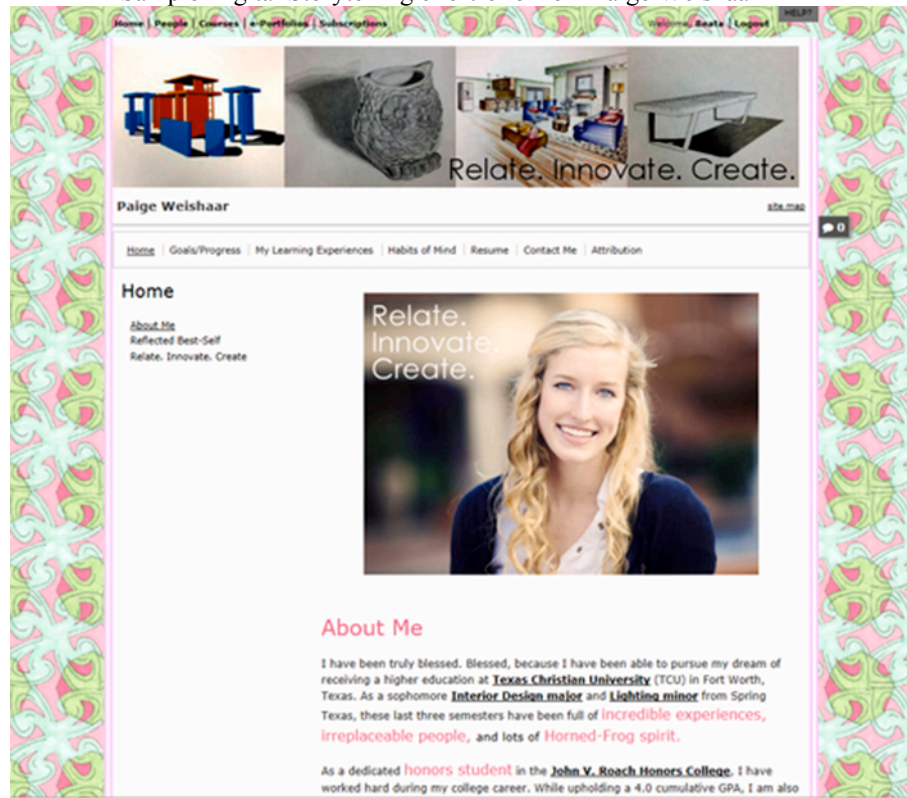
Note. Retrieved from https://tcu.digication.com/paige_weishaar/About_Me/published

to crowdsourcing, developments in information technology have changed how we work, live, and learn (Brynjolfsson & McAfee, 2011). While AAC&U VALUE rubrics capture some of the essential learning outcomes for undergraduate education (i.e., inquiry and analysis, critical thinking, written communication, teamwork), tomorrow's graduates need additional higher-order skills or meta-skills to be successful performing jobs that have not yet been invented. Neumeier (2013) offers educators a framework of five metacognitive skills students need to develop, regardless of discipline, to produce value in our new economy. These have been summarized by Jones (2016) and include,

- Feeling: a "pre-requisite for the process of innovation, feeding empathy, intuition, and social intelligence" (p. 314);
- Seeing: "the ability to craft a holistic solution, also known as systems thinking, which helps solve complex, non-linear problems of the Robotic Age" (p. 314);
- Dreaming: "the skill of applied imagination,

which yields innovation" (p. 314);
- Making: also known as design thinking, making "requires mastering the design process, including skills for devising prototypes" (p. 314);
- Learning: "the ability to learn new skills at will, producing learners who know what and how to learn just in time for a new problem" (p. 314).

We believe ePortfolio projects that involve personal branding and digital storytelling goals can help fuel the development of Neumaier's (2013) 21st century metacognitive skills:

- Feeling: The projects provide opportunity to build empathy during audience consideration as students develop their narrative, select artifacts, and build the ePortfolio. Students consider needs and values of their audience and how the story they are creating addresses those needs.
- Seeing: The projects provide an opportunity to improve systems thinking during prototyping

Figure 4
Digital Storytelling ePortfolio for Personal Brand Development - Project Outcomes

ePortfolio Pedagogies & Outcomes	*Pedagogies*		
	Mentoring		Inquiry, Reflection, Integration
	Outcomes		
	Institutional, Program, Course Outcomes	Self-Awareness, Self-Direction	Deeper, Connected Learning

ePortfolio Technologies & Outcomes	*Technologies*		
	Social Media Tools	Digital Storytelling Tools	ePortfolio Platform
	Outcomes		
	Connections with Others	Collaboration	Technology Skills

Key 21st Century Skills Developed	Systems & Design Thinking Skills	Empathy	Creativity	Ability to Learn & Learning Ownership

of the portfolio. While developing the portfolio students must consider various inputs, such as personal brand elements, artifacts, media, and narrative and arrange them in a way that meets the web design requirements, while also targeting the appeal for their selected audience: "Digitized artifacts may be assembled into the virtual environment much the same way that a theatrical setting must be constructed, costumes built, or properties introduced" (Ramirez, 2011, p. 3).

- Dreaming: The projects give students a chance to develop creativity when designing their personal story, selecting the color scheme, creating a portfolio banner, and selecting media and artifacts, so that the ePortfolio will appear aesthetically pleasing to the target audience. When students engage seriously in selecting and arranging learning artifacts, they exhibit the kind of interpretive agency required of all effective storytelling, a necessarily creative act.

In composing a digital story, students choose from many possible ways of telling their story—via words, still images, video clips, graphics, sound, and narration. In so doing, they enact creative agency.

- Making: Students practice design thinking as they refine their early ePortfolio prototypes, based on feedback, until they are satisfied that the brand communication they have created is compelling to their audience. Digital storytelling offers unique opportunities for social learning, as stories-in-process are shared, discussed, and revised and as students compose in anticipation of sharing their stories with their target audience.

- Learning: The projects enable students to learn how to learn by requiring them to use technology tools not taught in class, such as various digital storytelling tools. Although for some students, being asked to use an unfamiliar technology can initially be a barrier to learning, working in a new medium heightens awareness of the learning

process. Furthermore, "storytelling makes composition strategies visible in new ways. Students have reported that they were more aware of the compositional strategies involved in writing after they had worked with multimedia authoring projects" (Oppermann, 2008, p. 179).

Thus, in addition to achieving well established ePortfolio goals such as heightened self-awareness, and deeper, connected learning, our approach, emphasizing personal branding using digital storytelling strategies, has the added benefit of helping students build relevant 21st century skills that are advocated by Neumeier (2013), as presented in Figure 4.

Digital Storytelling ePortfolios further support the argument of Huber et al. (2015) that e-Portfolios are yet another high impact practice (Kuh, 2008). For further discussion of the impact of digital storytelling ePortfolios on metacognitive development, please see Jones and Terry (2015). For a more detailed description of how the authors have developed this approach to ePortfolios and other helpful resources, please see Jones and Leverenz (2014).

In future implementations, we plan to place more emphasis on broadening students' understanding of their personal brand by incorporating existing student content from other social media platforms to strengthen their stories. We also plan to make more explicit pedagogically the connection between ePortfolio construction and the development of Neumeier's (2013) meta-cognitive skills. Future studies will be needed to assess the effectiveness of our approach for helping student develop these meta-skills. We will also need to examine the pay-offs to students of developing these skills in the context of crafting and communicating their personal brands.

Conclusion

As ePortfolio adoption at universities is growing and students are asked to create ePortfolios ever more often, we hope the pedagogical framework presented here can assist faculty who wish to maximize student motivation and satisfaction while also producing high quality artifacts and student learning. The framework facilitates digital identity development and personal brand creation, extending the work of previous ePortfolio scholars. Heightening student self-exploration by including personal branding within a context of ePortfolio development can make portfolio work more compelling for students, as evidenced in our pilot study of second- through fourth-year students in an honors colloquium. Furthermore, a digital storytelling/personal branding approach to ePortfolios can facilitate students' development of key 21st century meta-skills (Neumeier, 2013), as well as their own human and social capital. We see our work as validation of Antoine de Saint-Exupery quotation, "If you want to build a ship, don't drum up people to collect wood and don't

assign them tasks and work, but rather teach them to long for the endless immensity of the sea."

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Appendix A
TCU FrogFolio Template and Prompts

Personal Learning Goals

Desired College Outcomes

College is a time of tremendous change and transition. In fact, the sheer number of changes and adjustments can be a bit disorienting. For this reason, setting goals can be a helpful way of establishing one's direction and purpose. With this in mind, reflect on the following questions:

- What do you hope to gain from college, other than a degree?
- What kind of growth or development or skills acquisition do you want from this experience?
- What kind of work do you hope to do someday, and how will you get there?
- What kind of person do you hope to be in the world?

Be sure that the goals you establish are SMART: Specific, Measurable, Attainable, Relevant, and Time-bound.

Progress toward Outcomes

How would you assess your work toward the goals you named in the previous page of this section? What kinds of experiences are you having in college that are moving you toward your goals? What experiences and opportunities are still out there that you'd like to pursue? What challenges or obstacles have presented themselves and how are you dealing with those challenges?

My Learning Experiences

This section of FrogFolio contains learning artifacts that represent a student's varied learning experiences at TCU. Through reflecting upon and documenting these artifacts, a student represents what they know and can do, and how growth in knowledge and the capacity to act has changed them. This section contains two major sub-sections: 1.) Courses, and 2.) Co-curricular experiences. Both sections contain evidence of signficant learning.

Courses

This page in My Learning Experiences is where students reflect upon, archive, and display "artifacts" that represent significant learning experiences in college. An artifact can be almost anything that represents a learning experience—papers, blogs, photos, audio or video files, presentations, projects, work samples, etc. Students should use the artifact to tell the story of a learning experience. Rather than simply uploading a file to the page, students should describe the artifact or experience—what it is, why it was an important learning experience, and how the information or experience affected their way of seeing themselves or the world. Students should create a page for each course, and then place relevant artifacts from that course on the page.

Co-Curricular

Within the Co-Curricular Experiences page students have the opportunity to reflect on significant learning experiences that occur outside the formal classroom. Students are encouraged to create tabs/pages for organizations, clubs, honor societies, leadership programs, internships, etc. that have shaped their college experience. For each experience, students should use artifacts, stories, and examples to describe and reflect upon the impact of that experience in terms of personal learning and growth.

TCU Learning Goals

In this section of FrogFolio, students articulate and reflect upon the connections between their learning experiences and different parts of the TCU Mission Statement. Connecting learning experiences to the university's mission helps students become integrative thinkers and understand how the varied learning experiences of college come together to shape thought and action.

Knowledge & Ability to Act as a Learner Informed by the Liberal Arts

The learning artifacts and experiences that I have placed on this page demonstrate how my thinking and action has been shaped by my liberal arts education.

The following statements can serve as prompts to help you consider what it means to be a liberal arts learner:

- thinking critically using tools from literature, the humanities, social and natural sciences, fine arts, and mathematics;
- engaging thoughtfully and drawing reasoned conclusions about complex information and situations;
- demonstrating an ability and willingness to learn in response to the challenges posed by a diverse and evolving society;
- influencing others through written, spoken, or artistic expression;
- using appropriate methods of inquiry to analyze important natural, social, and human phenomena;
- applying theoretical and practical knowledge to novel situations.

Knowledge & Ability to Act as an Ethical Leader

The learning artifacts and experiences represented on this page demonstrate how I understand, articulate, and enact ethical leadership.

The following statements serve as prompts to help students think about what ethical leadership means and the kinds of experiences they might draw upon to talk about insights and growth in this area:

- being aware of the personal and interpersonal complexities of change, and demonstrating the ability to initiate, evaluate, and manage change;
- ability to consider the perspectives, needs, and expertise of others and work with them to solve problems;
- ability to articulate a coherent leadership style and philosophy;
- employing core knowledge from a discipline of choice to develop and demonstrate an enhanced capacity for effective leadership.

Knowledge & Ability to Act as a Responsible Citizen

The learning artifacts and experiences on this page demonstrate my understanding of what it means to be a responsible citizen.

The following statements serve as prompts to help students think about what responsible citizenship means and the kinds of experiences they might draw upon to talk about insights and growth in this area:

- demonstrating informed participation in civic discourse and decision-making at local and global levels;
- recognizing unfair, unjust, or uncivil behaviors and acting to challenge those behaviors appropriately;
- participating in and reflecting upon upon service or volunteer activities;
- understanding the economic, political, and ecological implications of private decisions and public policies;
- understanding and enacting practices that foster personal and public health;
- managing time effectively in order to accomplish goals;
- participating in organizational or civic systems of governance

Knowledge & Ability to Act as a Committed Participant in the Global Community

The learning artifacts and experiences on this page demonstrate my understanding of and commitment to being a global citizen in the 21st century.

The following statements serve as prompts to help students think about what committed participation in the global community means and the kinds of experiences they might draw upon to talk about insights and growth in this area:

- Appreciating the interconnectedness of society, culture, and individual identity;
- Knowing and understanding the impact of world religions, worldviews, and cultural frameworks;
- Engaging with other perspectives and cultures with reason and respect;
- Demonstrating the ability to generate informed opinions on global issues and thoughtfully articulate those opinions;
- Participating in diverse cultural activities;
- Articulating the advantages and challenges of a cosmopolitan society.

Resume

Attribution

Appendix B
Personal Brand Profile Worksheet

PERSONAL BRAND PROFILE WORKSHEET*				
Your Top 5 **Needs**				
Your Top 10 **Values**				
Your Top 10 **Interests & Passions**				
Personal **Mission** Statement				
Personal **Vision** Statement				
Your **Strengths** from StrengthsQuest				
Your Top 10 **Personality Traits**				
Your **Reflected Best-Self** Traits				
Your Top 10 **Accomplishments**				
3 SMART PROFESSIONAL **Goals**				
Competencies Needed to Achieve Your Goals (See e.g., Naseweb.org)				
Activities Needed to Complete to Develop the Competencies				
Target Audience Statement				
4 **Potential Employers/Grad Schools** with URLS to websites				
Company/Grad School Fit (Assess Yours vs. Company's values, etc.)				
Target Audience **Differentiation** Statement				
Unique **Promise of Value** Statement				
Personal **Brand Statement**				
Personal **Brand Tagline**				

*To accompany Chritton (2012), Roberts et al. (2005), Anderson (2004), and Solove (2008).

Appendix C
STORY OF ME Worksheet for ePortfolio

ePortfolio Audience: Your Target Audience from Personal Brand Worksheet – Employers/Grad School Counselors

BANNER IMAGE (With Optional Quote/Tagline/Equation, etc.) – What Does It Portray About You?			

ABOUT ME

Your HOOK: Highlights that Make YOU Interesting & Tells Your Story (e.g., Passions, Purpose & Play; Mission/Vision/Tagline):	Media to Illustrate Your Interesting Facts (Graphics, Pictures, Video)	**Main Picture- What Does it Portray About You? Is it related to the HOOK?**
		Social Media Links/Feeds
		Quote (Optional)

GOALS

Your SMART Goal(s) in Life	Competencies Needed to Accomplish the Goal(s)	PLANNED/COMPLETED Learning Experiences to Develop the Competency	Media to Illustrate the Competency (e.g., Graphics, Pictures, Infographics, Word Clouds, Maps, Timelines, Video)

PROGRESS TOWARDS GOALS

Competencies Needed to Accomplish the Goal(s)	Learning Experiences that DEVELOPED the Competency (Courses/ Life Experiences)	Artifacts Demonstrating Competency (e.g., PPT, Paper, Spreadsheet, Video, Audio, Reflection)	Media to Illustrate the Developed Competency (e.g., Graphics, Pictures, Infographics, Word Clouds, Maps, Timelines, Video)

LEARNING EXPERIENCES

Courses			
Course Name/Semester, Professor	Reflection on Learning*	Artifact to Illustrate Learning (e.g., PPT, Reflection, Spreadsheet, Video, Audio)	Competency/Habit of Mind for Which Learning is Relevant

Co-Curricular/Life Experiences			
Activity name/Semester	Reflection on Learning*	Artifact to Illustrate Learning (e.g., PPT, Reflection, Spreadsheet, Video, Audio)	Competency/Habit of Mind for Which Learning is Relevant

*Reflection on Learning – sample prompts:
(1) How did this course/experience prepare you for your professional career?
(2) How did this experience allow you to grow as a person, strengthening your skill set or knowledge?
(3) What did you learn about yourself through this experience?

RESUME
Student resume should be (1) viewable within Digication, (2) available for download via a **.pdf** link, and (3) optionally, available visually through a link to an **infographic resume (see below).**

OTHE

Other Consideration	Where Implemented?	How?
Integration Across Learning Experiences in Competency Discussion(s)		
Evoking Emotion		

SAMPLING OF HELPFUL TOOLS:
- Web Color Code Specifier: http://html-color-codes.com/
- Banner Creators: http://www.fotor.com/features/text.html , http://picfont.com/
- Picture Collage Creator: http://www.ribbet.com/app/?create_collage#/collage/grid
- Infographic Resume- http://kinzaa.com/ , http://re.vu/
- Infographic Charts: http://infogr.am/ , http://piktochart.com/ , http://www.easel.ly/
- Word Clouds: http://Wordle.net , http://www.jasondavies.com/wordcloud
- Timelines: http://www.timetoast.com/ , http://www.dipity.com/ , http://www.tiki-toki.com/
- Map Creator: http://www.zeemaps.com/

Appendix D
ePortfolio Assessment Rubric

NAME:_____

ELEMENT	STANDARD	POINTS (300 TOTAL)
WEB DESIGN PRINCIPLES (75 pts)		
Information Presentation (satisfies all standards)	• Easy to read with visual organization using readable fonts, *bullets, italics, and bold.* • Uses *headings and subheadings* to organize the message. • External and internal *hyperlinks* used where referring to organizations, companies, programs, etc. • Top *banner* created with an appropriate image and *quote/tagline/equation* to tell your story • *Multimedia* - photos, graphics, sound, video enhance the message, create interest, *aligned* next to the text and appropriate for the target audience, *on every page*. • Incorporates *multimedia elements created especially for the portfolio, e*.g., a map, timeline, infographic.	_____out of 65
Organization (satisfies all standards)	• *Menus* make sense and easily organize your "story." • All external *links open properly* and integrated within the narrative for ease of use. • Each *Habit of Mind* page clearly *identifies which bullet(s)* are going to be *discussed*.	_____out of 10
CONTENT (225 pts)		
Writing Mechanics (satisfies all standards)	• Text *has no errors* in grammar, capitalization, punctuation, and spelling. • Text is *concise and easy to read*. Message is clear by scanning the screen.	_____out of 10
Resume (satisfies all standards)	• Resume is in an appropriate format for your discipline (see career services). • Included also a *.pdf version* and a link to *a visual resume (optional +3pts).*	_____out of 10
Home/About me (satisfies all standards)	• Has a brief *story about you*, what's important to you, what you're studying, what you're involved in, as *appropriate to your audience*. • Has a *mission/vision/tagline* incorporated into your story from the Personal Brand Worksheet. • Includes a *meaningful photo* that tells the story of who you are. • Has *links to social media* sites where you are present professionally (e.g., LinkedIn, slideshare/prezi, blog, etc.). • Has a *Reflected Best-Self/This I Believe Essay (optional+3 pts*).	_____out of 25
Goals/Progress (satisfies all standards)	• Includes a statement of what you want to accomplish in life/what kind of person you want to be—envision a *future self*. • Describes your professional *goals & desired competencies.* • States what *steps you have taken to accomplish development* of select competencies/goals. • Discussion includes *links to learning experiences/artifacts*.	_____out of 20
Learning Experiences (satisfies all standards)	• Includes *reflection on at least 4 courses and 4 co-curricular experiences.* • All learning experiences are *linked to goals/progress or habits of mind* pages. • Artifacts and *work samples are clearly related* to the message conveyed (No syllabi, or course handouts- *3pts*).	_____out of 60

Integrative & Reflective Learning (satisfies all standards)	• Makes insightful *connections across courses and experiences.* • Reflects upon impactful learning experiences from class, co-curricular activities and life and *how those experiences have shaped understanding of self, others, and/or the world* in relation to achievement of goals. • Demonstrates how learning *experiences are connected to desired learning outcomes*. • Draws conclusions by *combining examples*, facts, theories or methodologies *from more than one field.*	_____out of 40
MUST COMPLETE AT LEAST 3 OF THE 4 HABITS OF MIND (60 PTS)		
Learner Informed by the Liberal Arts grounded in evidence (satisfies at least one standard; no more than 3)	• Thinking critically using tools from literature, the humanities, social & natural sciences, fine arts, & mathematics. • Engaging thoughtfully and drawing reasoned conclusions about complex information and situations. • Demonstrating an ability and willingness to learn in response to the challenges posed by a diverse and evolving society. • Influencing others through written, spoken, or artistic expression. • Using appropriate methods of inquiry to analyze important natural, social, and human phenomena. • Applying theoretical and practical knowledge to novel situations.	_____out of 20
Ethical Leader grounded in evidence (satisfies at least one standard; no more than 3)	• Shows awareness of the personal and interpersonal complexities of change, and demonstrating the ability to initiate, evaluate, and manage change. • Considers the perspectives, needs, and expertise of others and work with them to solve problems. • Articulates a coherent leadership style and philosophy. • Employing core knowledge from a discipline of choice to develop and demonstrate an enhanced capacity for effective leadership.	_____out of 20
Responsible Citizen grounded in evidence (satisfies at least one standard; no more than 3)	• Demonstrates informed participation in civic discourse and decision-making at local and global levels. • Recognizes unfair, unjust, or uncivil behaviors and acting to challenge those behaviors appropriately. • Participates in and reflects upon service or volunteer activities. • Understands the economic, political, and ecological implications of private decisions and public policies. • Understands and enacts practices that foster personal and public health. • Manages time effectively in order to accomplish goals. • Participates in organizational or civic systems of governance	_____out of 20
Participant in the Global Community grounded in evidence (satisfies at least one standard; no more than 3)	• Appreciates the interconnectedness of society, culture, and individual identity. • Understands and articulates the impact of world religions, worldviews, and cultural frameworks. • Engages with other perspectives and cultures with reason and respect. • Demonstrates the ability to generate informed opinions on global issues & thoughtfully articulates opinions. • Participates in diverse cultural activities. • Articulates the advantages and challenges of a cosmopolitan society.	_____out of 20

Appendix E
TCU ePortfolio Pilot Pre/Post Test

1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral/undecided*, 4 = *agree*, 5 = *strongly agree*

I understand the purpose(s) and potential uses of ePortfolios to contribute to my growth as a learner and the development of my professional digital identity.

    1   2   3   4   5

I can identify and provide specific examples of the knowledge and skills I've gained from different types of learning experiences.

    1   2   3   4   5

I understand the importance of connecting the knowledge I've gained from one place (e.g., the skills gained working with others on a service project), to other situations (e.g., working with a team to plan and produce a group presentation in class).

    1   2   3   4   5

I understand and can demonstrate how my varied learning experiences are connected to certain desired learning outcomes of the university (e.g., demonstrations of ethical leadership, responsible citizenship, and ethical participation in the global community).

    1   2   3   4   5

I can demonstrate (through an essay, paper, presentation, video, ePortfolio page, etc.) the knowledge/skills I've gained from pursuing an area of study, or engaging in a series of actions, that reflect my passions and interests.

    1   2   3   4   5

I can identify significant, impactful learning experiences both inside and outside the classroom, and thoughtfully reflect upon how those experiences have shaped/changed my understanding of self, others, and/or the world.

    1   2   3   4   5

I understand the need to develop a professional digital identity that is distinct from a typical Facebook, LinkedIn, or other similar online identity.

    1   2   3   4   5

I believe it is important to develop and maintain a professional digital identity that demonstrates my knowledge, skills, values, goals and contributions to the human community.

    1   2   3   4   5

Short Answers:

How can ePortfolios help you to think differently about the connections between all your varied learning experiences (for example, course work, co-curricular programs and activities, internships, etc.)? Please explain briefly.

In what ways are you most interested in what an ePortfolio can do for you as a student and future professional? Please explain briefly.

What is the most challenging or confusing aspect of using ePortfolios? Please explain briefly.

Please list reasons why a student would want to take advantage of ePortfolios:

Please list reasons why a student would not want to use ePortfolios:

Have you ever used an ePortfolio before? If so, in what way?

What other questions, concerns, or comments do you have about using ePortfolios at TCU?

Demographic Information:

Gender: Male/Female   Age: _____   Your major: _____

Race/Ethnicity: _____   Classification: first-year, second-year, third-year, fourth-year

Using Digital Portfolios to Develop Non-Traditional Domains in Special Education Settings

Mary Clancy and Jessica Gardner
Cooke Center Academy

This article chronicles the development of a portfolio system used primarily to assess special education high school students on a variety of traditional and non-traditional standards and skills. Developing, capturing, sharing, and assessing student learning can be problematic when traditional testing or classroom assessment methods are not an option. Digital portfolios, when integrated correctly, provide meaningful opportunities to capture authentic student learning and assess students' growth. Additionally, digital portfolios can show evidence of student progress and allow students to participate in the assessment process, as well as facilitate opportunities for parents (and future teachers or organizations) to observe and support a child's work. We describe the development, implementation, and evaluation of a digital portfolio pilot program in a special education high school. The pilot was created in response to the need for opportunities to assess authentic student work through a variety of multimedia formats, intended to travel with students as they advance through the school system and beyond. As a result of the data and experiences, it is recommended that integrating digital portfolios into the teaching, reflection, and assessment processes when working with students with disabilities, is a way to increase opportunities for authentic assessment of traditional and non-traditional content areas, increase technology integration in classroom and community settings, and as a means to support and capture project-based learning.

A mainstay of education is to provide all students with the skills necessary to lead meaningful lives. These skills, translated into standards, are locally and nationally created learning goals for what students should know and be able to do, typically anchored to grade levels (Salvia, Ysseldyke, & Witmer, 2012). Student progress against these standards is measured through assessment, or the process of collecting data for the purpose of evaluation (Salvia et al., 2012). Assessment is a large component of educational organizations; aside from measuring student progress, it allows for communication of expected goals, provides targets for teaching and learning, and helps shape the performance of teaching and learning (Linn & Herman, 1997). Standards based testing, one method of assessment, has become the predominant practice for gathering information regarding student progress, in both general and special education. Alignment of assessment to academic content standards provides access to the general curriculum for students with significant cognitive disabilities, setting high expectations for all students (U.S. Department of Education, 2005); however, the heavy reliance on grade level content based standards testing, and omission of outcome or performance based assessments tied to criteria from a variety of domains, have led to inaccurate and incomplete assessments of student progress in special education (Browder et al., 2007).

Tracking student progress in special education often requires educators to make modifications to state achievement standards and assess students using Alternate Achievement Standards (AA-AAS; Browder & Spooner, 2011). AA-AAS offer teachers and administrators opportunities to assess students with significant disabilities using criteria appropriate to the developmental and learning needs of individual students. For students with severe disabilities, important goals in non-traditional domains such as life skills (e.g., preparing a meal, traveling on public transportation), speech and language development (e.g., initiating a conversation), or social-emotional growth (e.g., maintaining peer relationships) are often difficult to assess. These skills, generally absent in state and national standards, are necessary for students to lead a successful and independent life after graduation (Browder & Spooner, 2011). Therefore, educators of students with disabilities must face the challenge of determining how to assess students appropriately and effectively in these critical life skill domains.

Literature Review

History of Assessment

Assessment in schools has a long political history rooted in accountability, which varies on the local and national levels. No Child Left Behind led to the design and implementation of more assessment programs in schools. There was increased accountability to the 2004 reauthorization of the Individuals with Disabilities Education Act (IDEA), which was initially created to ensure compliance with the educational right of all students with disabilities to a Free and Appropriate Public Education (FAPE; Thornton, Peltier, & Medina, 2007). IDEA required that goals and assessments for grade school children align with students' educational needs. The majority of these assessments are tests tied to grade-level reading and math content standards,

which Manasevit and Maginnis (2005) argued moved education towards a "culture of accountability of results" (p. 51). Most students with disabilities participate in these assessments, with accommodations. For the small percentage of students with disabilities unable to participate in state and district assessment systems, even with accommodations, states are permitted to use modified and/or alternative assessments (Thurlow, 2004). Specifically, a student with a disability may be tested through (a) the regular state assessment, with or without modifications; (b) an alternative assessment based on grade level standards; (c) an alternative assessment based on modified achievement standards; or, (d) in rare cases, an alternate assessment based on alternate achievement standards (Boser, 2009). The U.S. Department of Education (2003) has defined alternate assessment as,

> An assessment designed for the small number of students with disabilities who are unable to participate in the regular State assessment, even with appropriate accommodations. An alternate assessment may include materials collected under several circumstances, including (1) teacher observation of the student, (2) samples of student work produced during regular classroom instruction that demonstrate mastery of specific instructional strategies in place of performance on a computer-scored multiple-choice test covering the same content and skills, or (3) standardized performance tasks produced in an "on demand" setting, such as completion of an assigned task on test day. To serve the purposes of assessment under title I, an alternate assessment must be aligned with the State's content standards, must yield results separately in both reading/language arts and mathematics, and must be designed and implemented in a manner that supports use of the results as an indicator of [Adequate Yearly Progress]. (p. 68699)

Assessment for Students With Disabilities: The Debate

Presently, educational stakeholders are debating the effectiveness and purpose of these grade-based standard assessments for students with disabilities, with an emphasis on how modifications affect the reliability of student performance, as well as the need for an assessment system that is both outcome-based and reflective of non-standard based goals and progress (Plake, 2011). Perner (2007) not only calls into question the development, administration, scoring, and reporting of these alternative assessments but also their educational utility for improving instruction, as well as their alignment with content

standards and application to the life skills curricula. Kleinert et al. (2002) showed that there was no connection between a student's post-school outcomes and their scores on these alternative assessments.

An assessment must be valid, reliable and usable to be considered effective, yet there is a discrepancy surrounding what is exactly an effective instrument of assessment in special education. Alternative assessments should: allow teachers to determine level of functioning at time of testing, identify specific skills acquired, inform and support program evaluation, hold teachers accountable to curriculum, and be broad and flexible to account for the diverse population of learners (Rabinowitz, Sato, Case, Benitez, & Jordan, 2008). According to Rabinowitz et al. (2008), checklists, portfolios, and performance assessments can be tailored to the needs of students with significant cognitive disabilities and provide substantively more opportunities to demonstrate learning than do traditional multiple-choice assessments. There is currently a need for more research on effective instruments of alternative assessment for special education.

Assessment goals for special education students have also been largely debated. Kleinert and Kearns (1999) questioned whether alternative assessments should focus on the content standards or a separate set of learner outcomes aligned with a functional curriculum. A functional curriculum focuses on skills required of everyday life, and enhanced participation in society as adults, taking into account a student's individual needs and strengths (Clark, 1994). It incorporates functional academics, decision making, and problem solving, for students that have significant challenges maintaining and generalizing new skills at the same pace with similarly aged peers (Clark, 1994). Browder et al. (2003) have found that effective curricula tie functional skills to content standards. The incorporation of a functional curriculum also provides additional opportunities to assess vocational interests and aptitudes, work related social behaviors and attitudes, and self-determination competencies, which fall under the purview of transition services mandated by the 1991 IDEA reauthorization of the Education for all Handicapped Children Act of 1975 (Reschly, 2002). The ratio of functional to academic standards needed to help special education students access the general education curriculum is currently under-researched (Browder et al., 2005).

Portfolios as Forms of Assessment in School Settings

In an effort to capture student learning and progress in ways that standardized assessments cannot fully provide, many schools turn to the use of portfolios. Portfolios are used for a variety of purposes in a school setting, including formative and summative assessment (Popham, 2002; Rivera & Smith, 1997). The purposes of portfolios can vary, dependent on

teacher, student, or school organizational goals. Schools most often use portfolios to document the learning process in a growth or developmental portfolio or to show samples of student's best work in a showcase portfolio (Barrett, 2007; Gronlund, 2006). In 2005, some form of portfolio and performance based assessments was used as alternative assessments by the majority of states (Thompson, Johnstone, Thurlow, & Altman, 2005). Portfolios differ from testing in that portfolios are able to represent a wide range of material that can be individualized for students, are able to capture collaborative processes inherent in classroom instruction, and have the ability to address improvement, effort, and achievement as well as work on functional projects beyond the scope of the classroom (Popham, 2002; Wesson & King, 1996). These real-world, adaptive and functional skills based projects are often referred to as "authentic tasks" that address daily living, and are often a critical component of portfolio assessments.

Formative assessment has been defined as authentic assessment designed to "provide [teachers] with information on what students understand, where they are experiencing difficulties, and how the teaching process may need to be adjusted to overcome difficulties that have been identified" (Gillies, 2014, p. 1). In designing an assessment that can provide a glimpse into student understanding, mastery, and development, teachers are provided with real-time information to inform their planning process. Evidence of misconceptions in student understanding allows educators to further address gaps in learning in future lessons.

Schools employing project-based learning (PBL) methods have found portfolios effective in documenting development of progress, in addition to capturing goals and skills not otherwise obtained through traditional assessment means (Chang & Tseng, 2011; Gulbahar & Tinmaz, 2006). In educational settings that utilize PBL methods, students are often tasked as a learning community, with hands-on activities, such as defining problems, collecting or analyzing data, communicating with others, and publishing results (Simkins, 1999). Since portfolios allow for documentation in multimodal forms (e.g., photographs, audio clips, paper-work samples), they are useful in documenting progress in a PBL classroom (Chang & Tseng, 2011).

Digital Portfolios/ePortfolios

As the availability and integration of technology increases within schools, ePortfolios (or digital portfolios), defined as a "digitized collection of artifacts" used for a variety of purposes, have entered the assessment conversation (Lorenzo & Ittelson, 2005, p. 1). In a study of 60 eighth-grade students, Chang & Tseng (2011) set out to examine the effects of an Internet-based portfolio on student achievement as a way to capture the outcomes as well as the process of student learning, in a classroom that utilized PBL methodology. Through analyzing work samples and questionnaires, the authors determined that using an ePortfolio system positively impacted student learning, elevating student's engagement and perception of their own learning. Thus, ePortfolios have the capacity to contribute positively to the learning and motivational process of students as well as function as a self-reflective assessment tool in curricula utilizing PBL.

Helen Barrett (2007) also studied usage and effects of ePortfolios within school settings. Together with TaskStream, an online provider of ePortfolios, Barrett (2007) researched and designed a two-year action research study in order to assess the impact of ePportfolios within K-12 settings. After analyzing over 20 schools, they concluded that ePortfolios can lead to positive collaboration among teachers and that ePortfolios have the potential to increase student self-reflection (Barrett, 2007). Further, Abrami, Venkatesh, Meyer, and Wade (2013) demonstrated that digital portfolios support self-regulated learning behaviors, such as reflection and goal-setting, and increase student learning as well as standard literacy skills.

ePortfolios have also begun to enter the assessment practices for students with special needs. As students with disabilities enter adolescence and young adulthood, they are offered transition services that highlight progress towards vocational and employment goals, as mandated by IDEA in 2004. Black (2010) proposed that Digital Transition Portfolios could be a means to teach critical self-advocacy skills for students with disabilities by fostering student motivation and engagement, offering experiences similar to that of typical peers, and by encouraging personal accountability for progress and products. ePortfolios offer multiple opportunities for students with disabilities to engage meaningfully with their own work, as well as self-reflect and assess.

ePortfolios for students with special needs have also been shown to shift the message from "assessment of student work to evidence of student strengths, interests, skills, and goals" (Glor-Schieb & Telthorster, 2006, p. 3). By engaging in this shift, ePortfolios have the ability to give students with disabilities a voice in their own transition planning, Individualized Education Plans (IEPs), or parent conferences. Glor-Shieb and Telthorster (2006) suggested multiple venues for students with disabilities to participate in ePortfolio work, including as an IEP preparation tool, communication devices, and culminating projects for graduation purposes.

Digital Portfolio Program Development

Digital portfolios were piloted in a small private special education school that serves students, ages 14-21 in an

urban area, with moderate to severe disabilities. Student diagnoses include autism, speech and language impairment, intellectual disability, learning disability, and/or physical disability. All students qualify for special education services from the New York State Department of Education and have Individualized Education Programs mandating small, self-contained classes. The existing curricula aim to provide students with a developmentally appropriate, multisensory curriculum to support academic development, social-emotional functioning, and vocational training in order to maximize independence in the school, home, and local community. Prior to the 2012-2013 school year, traditional paper portfolios were used to collect work samples of student work as evidence of goals assessed in the progress report. Portfolios were updated on a trimester basis by academic teachers and included classroom work samples and informal assessment results. Portfolios for each student were passed on to subsequent teachers in order to create a cumulative record of student work. After graduation, a student's paper portfolio was kept on site for five years.

Motivation

A committee of school faculty was selected during the 2012-2013 school year to assess the utility of the paper portfolios. At this time, it was determined that the ePortfolios presented a number of challenges: (a) content area teachers did not feel that paper work samples were the most effective evidence of student progress due to the multisensory nature of the curriculum; (b) clinicians felt that student progress made in the community and other non-traditional classroom settings (e.g., social settings) was not accurately captured within paper portfolios; (c) storage of the paper portfolios was presenting an issue due to limited space and storage options; (d) after four years of collection of work, portfolios were often large and disorganized; (e) administrators questioned the utility of students being able to use the portfolio as a future resource to outside agencies or organizations as evidence of strength/growth; and (f) with the increase in technology integration within classrooms and the school community, all faculty questioned whether paper portfolios were the most effective way to capture the current learning environment.

In the 2013-2014 school year, a small pilot group of teachers and clinicians were selected to trial a move towards digital portfolios at the high school. The goals of the pilot were identified:

- provide opportunities for the collection of authentic student work in an electronic format;
- allow for additional methods of assessing authentic student work;
- increase student participation in the assessment process;
- increase multimedia representation of student progress (e.g., video documentation);

- produce student and parent-friendly work samples that could travel with students across time.

Implementation

Software and Program Selection

After determining the goals of the pilot, the pilot team discussed feedback from the technology specialist, the division head, and content area teachers about staff and student use of technology. Based on this feedback, a set of criteria the chosen platform and program should satisfy was developed:

- is easy for staff, students, and parents to learn and use;
- offers extensive privacy controls;
- easy to use on the back-end;
- company open to communication and incorporating school feedback into future updates;
- allows students to take ownership of projects;
- allows students to take work with them when they graduate;
- allows students to share work outside of the school community; and
- provides access to training and professional development, as well as technical support.

After trialing a variety of programs, software was selected based on a determination by the school committee.

Phase One

Prior to beginning the pilot, a discussion of technical support structures and equipment needed took place. This was a critical step in the beginning stages of the ePortfolio process; available resources would shape the integration plan. Further, there are different digital portfolio programs available for different platforms; it was necessary to know what programs were compatible with the devices currently being used. Available equipment was inventoried and analyzed, including classroom and shared resources (Table 1). Then, the digital format that the work would take was noted: pictures, videos, Google Docs, slides and drawings, Microsoft Word documents, PowerPoint slides, and PDF scans. It was determined that there would be an increased demand for video-making equipment such as iPads, as well as actual computers for students to use to manipulate and upload work. Devices that would support capturing, editing, and uploading work would be preferable, and thus staff and student access to iPads was prioritized. In addition, a classroom set of 14 Apple MacBooks to be shared by all staff was added, as well as a permanent MacBook station, , consisting of five devices, in one of the classrooms In addition, the pilot team created a long-range

Table 1
Devices Figures per Year of Program

	Student Macbooks	Student iPads
Year 1	0	12
Year 2	14	24
Year 3	19	25

Table 2
Student-Centered Technological Device Classroom Use

	Year 2		Year 3	
	Periods in Use	Total Periods	Periods in Use	Total Periods
MacBooks	100	154	121	154
iPads	83	147	64	133

Note. Data taken from a representative sample, March of 2015 and March of 2016.

plan to begin replacing staff computers with ones capable of handling multimedia editing.

The first year, digital portfolios were piloted by three staff members spread across three content areas, to provide a wide scope of projects typical to the school. The Technology teacher, a Humanities teacher, and a Vocational Skills teacher used digital portfolios with all of their classes, which encompassed every student. Prior to launching digital portfolios, these staff members received over 225 minutes of professional development, in individual sessions, on the specific programs that they would be using, and in assessment planning/unit design. Throughout the first year, staff received ongoing support and training through push-in support by the Technology Specialist, as well as through digital guides and handouts. Starting the pilot with a controlled group of staff not only provided administration and the pilot team with feedback regarding necessary support and training before going full scale, but also created a staff-led digital portfolio team of experts who later served as a valuable resource for other staff members the following years. Due to the teacher-centric goals of the first phase, which focused on building faculty experience and proficiency, access to projects was not shared with parents.

Phase Two

In the second year, the digital portfolio program was launched with the whole school. All staff members were required to upload two projects per student each trimester. All staff members were given 105 minutes of small-group training by the department in the summer prior to the start of school, on the specific programs they would be using, assessment planning/unit design, as well as analysis of example projects from the first year. Staff received ongoing training through demo lessons, small group instructions, and digital guides. During this phase, students also received specific training on how to use the program

in their Technology classes throughout the year. Available hardware was also increased; available student devices were nearly tripled between the first and second years, and then increased an additional 15% between the second and third years (Table 1). It was also determined that staff would need increased access to technical support individually and when working with students on portfolio projects. All classes were given a weekly period in the technology lab with the Technology Specialist for portfolio specific work. In addition, the Technology Specialist attended monthly staff department meetings to discuss technical issues related to digital portfolios. In the second year, after faculty demonstrated proficiency developing high quality projects and using the program, parents were given limited access to final projects. Student and parent attitudes towards digital portfolios were noted as positive, through observation by classroom teachers and administration. Parents commented on the ease and availability of accessing student work and the opportunity to share within their respective communities. Students enjoyed having a larger audience in which to share work, both within and outside the school community.

Phase Three

In the third year, the digital portfolio program was expanded to parents, as well as the post high school program, which aims to facilitate transition to life after high school through specific life skills courses, vocational training, academic experiences, and paid internships. Parents received access in a tiered roll out. They were shown the program and their child's work by each teacher during the trimester through parent-teacher conferences. Following the conferences, parents were enrolled in the parent portal of the site by the Technology Specialist, and contacted with their specific access

Table 3
Projects and High Quality Projects by Year

	Year 2		Year 3	
	Published projects	High quality projects	Published projects	High quality projects
Math/science	107	71	79	57
English language arts/social studies	80	35	62	39
Related services	24	0	69	49

Note. High quality projects are defined as having a rubric aligned to report card goals as well as student reflections.

codes. By the end of this study, 74.47% of parents were enrolled and active (having logged in and interacted with at least one project in a given time frame) with the digital portfolios. In the third year, staff training was structured around improving projects and using projects as part of the assessment process. Additionally in the third year, staff were asked to reflect and offer feedback on the portfolio process for the school as a whole, as well as their specific projects.

Analysis and Recommendations

As schools that serve students with disabilities continue to develop effective assessment tools, ePortfolios must not be overlooked as a tool to capture vocational goals, functional curricula, student strengths, and interests. Based on observations and interviews from administration, staff and parents, and observation and evaluation of student work by staff and administration, the digital portfolio pilot has been the most successful in terms of increasing student reflection, increasing communication and collaboration between staff and with parents, aligning unit projects to student goals, and creating increased opportunities for project-based learning. Additionally, we saw an increased daily use of student-centered technological devices in the classrooms, which is a marker of project-based learning (Table 2).

In addition to the benefits for project-based learning, digital portfolios allowed for the capture of students skills and progress to be used for assessment, especially in non-academic domains (e.g., life skills). Prior to the digital portfolio pilot, evidence of related service work samples (defined as speech and language therapy, counseling, occupational therapy, adaptive skills, and vocational skills) were not available, and the school had limited opportunities for students, teachers, or parents to engage with student work in these domains. At this phase of the three-year process, related service portfolios consist of 34% of portfolio entries school wide (Table 3). Given the unique needs of the student population, another outcome of digital portfolios is an increased opportunity for related service professionals to assess student development in these domains. Furthermore,

related service digital portfolios created tangible evidence of non-academic (e.g., work-place skills) for students to take with them after graduation.

High quality portfolios were defined as project entries that aligned with progress report goals and incorporated student reflection. At this phase of the process, high quality portfolios consist of 69% of all entries, as compared to 38% in the second year (Table 3). The paper portfolios used prior to the start of the digital portfolio pilot program would not fall under the definition of high quality portfolios, lacking both report card aligned rubrics as well as consistent student reflections. The decrease in quantity and increase in quality of portfolio project entries between the second and third years of the program is likely attributable to the increase and shift in professional development, focusing more on self-reflection, unit planning, project design, and integration of technology into the lesson, instead of technological program basics. This had the added effect of making the teaching and lessons themselves more engaging and interactive, as evidenced by staff and student feedback and observations from the administrative team. In addition, further training on types of portfolio projects was provided, differentiating between growth, showcase, and assessment portfolios. During this training, examples of each type of portfolio, as well as what should be excluded from a portfolio piece, were included. Each department met with an administrator and the Technology Specialist to develop personalized goals for respective departments that supported the development of high quality portfolio entries. This additional training was necessary to clarify expectations, and in the case of many clinicians without formal teacher training, to clarify ideas surrounding unit, goal, and assessment planning. We recommend providing training before starting a digital portfolio project, not only on the platform chosen, but also on what an appropriate portfolio piece is, the purpose of portfolios in general, unit planning and the assessment process.

Technical support, for students and staff, was also a critical factor in the pilot's success. Initial resistance from staff was mainly centered on the additional time required to digitize work being done in different forms. After the first year, it was determined that much of the extra time came from uploading student work. To

address this, students were trained on how to use the website and upload work independently and directly from multiple devices. Students received this training and practice in their Technology classes; staff were not required to do this additional task. All staff members were also assigned one day a month in the technology lab, with the support of the Technology Specialist. During this time, they could bring their classes to upload work. While this was better than no designated time, the pilot team found that in the second year, this time was more productive and successful if it was flexible, meaning the Technology Specialist could push into a class as they finished a project. We recommend having a flexible and ongoing support system integrated into the classroom.

From a program perspective, several administrative shifts needed to occur in order to successfully implement the ePortfolio pilot. Dedicated time for staff development, small group trainings, and regular meetings were necessary to establish throughout all phases of the implementation. ePortfolios were prioritized within all departments and professional development time and funding was prioritized over the course of the process. Supervision meetings and annual reviews frequently highlighted ePortfolio processes and products as systems became integrated into the culture of the school community. To integrate ePortfolios effectively as both an instructional and assessment tool, we recommend dedicated professional development time, funding, and integrating manageable goals into the annual program plans for each school year.

Overall, we recommend a shift toward ePortfolios as a means of increasing technology integration within special education learning environments and as an assessment tool for traditional and non-traditional content areas in the areas of special education. In using ePortfolios, we have been able to assess student development more fully and accurately in content areas both in the classroom and in the community, provide students with increased opportunities to engage in the learning process, provide parents and organizations with a lens into a student's current functioning levels, and provide an effective structure for incorporating multimedia work into student work portfolios. As we continue to seek ways to improve the quality of education and assessment for our students, ePortfolios remain on the forefront of tools poised to support such goals.

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Examining the Impact of the Creation of Digital Portfolios by High School Teachers and Their Students on Teaching and Learning

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This mixed methods study examined the perceived impact of the creation and implementation of digital portfolios by 29 high school inservice teachers and their students representing 20 school districts within one state. However, most research on digital portfolios has focused on preservice and not inservice teachers. Findings demonstrated that digital portfolio creation resulted in increased teacher learning about technology, a reexamination of their pedagogy, better comprehension of their students' learning, reflective processes, and assessment, and reciprocal learning between teachers and students. Future digital portfolio research should focus on reciprocal learning processes on a longitudinal basis to learn of its outcomes, benefits, and challenges. Additionally, digital portfolios should be embedded in inservice teacher education as long-term professional development tools to reap similar benefits as those realized by preservice teachers who have engaged in digital portfolio development.

Since the late 1980s, the use and implementation of digital portfolios (i.e., ePortfolios, electronic portfolios, or web-based portfolios) in education—at all academic levels—has been increasing. This is most evident in schools, colleges, and departments of education (SCDEs), many of which have integrated digital portfolios and more traditional portfolios as part of the accreditation process as required by organizations such as the Council for the Accreditation of Educator Preparation, which emphasizes performance-based assessment, and also because they "foster deep student reflection and learning" (Strudler & Wetzel, 2011, p. 166). However, most of the empirical, published research investigating digital portfolios in teacher education has centered on preservice teachers—and not inservice teachers (Milman & Kilbane, 2005; Milman & Wray, 2014). This study sought to examine the impact of the creation of digital portfolios by high school teachers who then led their own students in the creation of digital portfolios.

Digital Portfolios and Teacher Education

The majority of published, empirical research studies focusing on portfolios in teacher education has centered on preservice and not inservice teachers (Milman & Kilbane, 2005; Milman & Wray, 2014). Generally, portfolio research in teacher education has shown many positive benefits associated with portfolios, whether they were developed in a traditional, print-based format (i.e., a binder) or with digital tools/technology (i.e., digital portfolios or ePortfolios). For example, portfolios have demonstrated positive effects on teacher identity (e.g., Berrill & Addison, 2010; Hopper, Sanford, & Bonsor-Kurki, 2012), knowledge (e.g., Craig, 2003, 2007; Wilson, Hallam, Pecheone, & Moss, 2014), professional development (Boulton, 2014; Dietz, 1995), reflection (Fox, White, & Kidd, 2011; Lyons, 1998), and technology skills (e.g.,

Bartlett, 2002; Herner-Patnode & Lee, 2009; Milman, 2005). Challenges associated with portfolios in teacher education have also been well documented, particularly the tensions that arise between the needs of SCDEs when using portfolios as assessment tools and the needs and purposes of preservice teachers when developing portfolios (e.g., Strudler & Wetzel, 2005, 2008, 2011; Wetzel & Strudler, 2005).

This study involved several searches using different search terms in the ERIC EBSCO HOST database and 15 education, educational technology, and teacher education peer-reviewed journals to locate studies that investigated digital portfolios and inservice teachers. These searches yielded only 10 studies about inservice teachers and digital portfolios. Researchers who have examined digital portfolios vis-à-vis inservice teachers have researched teachers' professional development (Bala, Mansor, Stapa, & Zakaria, 2012; Beck, Livne, & Bear, 2005; Boulton, 2014; Fox, Muccio, White, & Tian, 2015; Milman & Kilbane, 2005; Romano & Schwartz, 2005; Sung, Chang, Yu, & Chang, 2009; Turner & Simon, 2013), reflective practice (Boulton, 2014; Pitts & Ruggirello, 2012; Romano & Schwartz, 2005; Sung et al., 2009; Turner & Simon, 2013), and transformative learning (Stansberry & Kymes, 2007). Considering the limited number of studies, there is a need for more empirical research about digital portfolios and inservice teachers.

Beck et al. (2005) conducted a study using the Electronic Portfolio Assessment Scale (ePAS) which included 188 preservice and 19 inservice U.S. teachers' ratings of the perceived effects of digital portfolios on their professional development. By comparing four different groups of teachers who developed different types of formative and summative digital portfolios, the researchers learned that certain types of portfolios received significantly higher ratings for their contribution to teacher professional development. They also discovered that "formative portfolios that focused

on teacher development better supported professional outcomes than did the summative accountability portfolio. It was concluded that portfolios should not be used for the summative accountability of teachers" (p. 221). Beck et al. (2005) also suggested that the process of developing digital portfolios might be more important than the end result. However, external validity has not been established for the ePAS instrument; therefore, its generalizability is limited. Moreover, the sample studied consisted of only 9% inservice teachers and 91% preservice teachers; expansion of the study's inservice population might have different results.

In a qualitative study, Milman and Kilbane (2005) investigated the role of digital teaching portfolios in nine inservice teachers' professional development and classroom practice. They found that digital teaching portfolios "fostered teachers' authentic professional development" (Milman & Kilbane, 2005, p. 57), "acted as catalysts for ongoing professional development," (p. 59), and helped the teachers experience "anew what it was like to be a learner again" (p. 61). However, their sample was very small. Therefore, their findings cannot be generalized to other populations; moreover, their study examined teachers in two different digital portfolio development courses at two different institutions in the United States. Similarly, Sung et al.'s (2009) mixed methods study of 44 inservice, contracted, full time, long-term, elementary school substitute teachers in Taiwan took place via a course; however, in their study the context was a classroom assessment, and not a digital portfolio development course. The researchers found the structure of the course coupled with multiple supportive measures—"guided journal writing, discussions forums, mechanisms for self- and peer-assessment" (Sung et al., 2009, p. 384), simultaneously cultivated the teachers' professional development and creation of their digital portfolios.

Bala et al. (2012) conducted a study of 20 primary and secondary English language teachers, from different schools in Malaysia, who had to create digital portfolios in a 6-week period. They determined the creation of digital portfolios cultivated the teachers' professional development, particularly their technology proficiency. However, a major shortcoming of this study is the lack of detail in the methods employed. It is also unclear why the teachers were required to develop digital portfolios and within what context (e.g., for a credit-bearing course or professional development). Boulton (2014) investigated how digital portfolios enhanced the career skills of eight first-year inservice teachers in England who had completed a graduate certificate or degree program the previous year. She discovered that although digital portfolio development promoted teachers' self-regulation, self-efficacy, and self-evaluation, several obstacles hindered the teachers' progress. Specifically, schools needed to embed digital

portfolios as professional development tools, provide opportunities for teacher collaboration, and schedule time throughout the school year for the teachers to continue working on their portfolios (Boulton, 2014).

Turner and Simon's (2013) study showed that digital portfolios promoted the professional development of nine teachers from England. Through the portfolios, the teachers made connections to and demonstrated their comprehension of theory and practice, documented changes in their beliefs and practice over time, and deepened their professional reflection about their teaching. Although their study did not specifically focus on digital portfolios, digital portfolios emerged as important components to understanding the teachers' professional development. Additionally, their description of the digital portfolios as "mediating objects" (Turner & Simon, 2013, p. 6) is similar to Milman's (2005) findings, in which digital portfolios acted as catalysts to teachers' professional development. On the other hand, Fox et al. (2015) discovered differences in teachers' professional growth as documented in program portfolios, depending on teachers' levels of experience. As such, they recommended differentiated approaches for teacher professional development.

Researchers of five studies (i.e., Boulton, 2014; Pitts & Ruggirello, 2012; Romano & Schwartz, 2005; Sung et al., 2009; Turner & Simon, 2013) found positive benefits related to inservice teachers' reflection or reflective practice and digital portfolios, although Romano and Schwartz's (2005) and Turner and Simon's (2013) studies were broader in scope. For instance, Romano and Schwartz (2005) investigated the impact of digital portfolios, online discussions, and videotaping of 10 elementary, middle, and high school beginning teachers teaching in the United States. Further, Turner and Simon (2013) studied their masters program, which required teachers to develop digital portfolios); they discovered that digital portfolios promoted the participants' reflective practice as both a process and outcome of digital portfolio development.

Three studies (Boulton, 2014; Pitts & Ruggirello, 2012; Sung et al., 2009) specifically investigated teachers' reflective statements in digital portfolios. Boulton (2014) discovered two major differences in inservice teachers' reflections when compared to those they crafted as preservice teachers. As inservice teachers, the length of their reflections was shorter and their content focused more on teaching practice; as preservice teachers, reflections were longer and centered on theory. In a study by Pitts and Ruggirello (2012) of nine inservice secondary science teachers in the United States, they found that the entries in the teachers' digital portfolios that best demonstrated teachers' reflective practice were those that "explicitly showed how they experienced growth (increased

professional competency) over time through well-coordinated sets of baseline- and post-baseline evidence" (Pitts & Ruggirello, 2012, p. 49). On the other hand, Sung et al. (2009) conducted analyses of the teachers' reflective statements in teachers' digital portfolios using Sparks-Langer et al.'s reflection framework. By analyzing the reflective statements, they found the highest level of reflection achieved by the largest majority of teachers (100%) according to the framework was 5. In this framework, reflections could range from 1 (no connection/reflection) to 7 (highest level of reflection). Yet, 68.2% achieved reflection level 6 and 34.1% achieved reflection level 7, illustrating that the reflective statements in the teachers' digital portfolios reached relatively high ratings on the Sparks-Langer reflection framework. Through the development of the digital portfolios, the inservice teachers demonstrated significant progress with regards to classroom assessment.

Stansberry and Kymes (2007) investigated whether or not the development of digital portfolios fostered transformational learning in 78 inservice teachers enrolled in four different semesters of a master's program in the United States. They also investigated whether or not the teachers would require their own students to create portfolios once they created theirs. Analysis of quantitative data demonstrated that it would be unlikely for teachers to have their own students develop their own digital portfolios. However, there was "evidence of transformational learning to some degree" (Stansberry & Kymes, 2007, p. 491) even though analyses of qualitative data provided a stronger connection between the development of digital portfolios and transformational learning. For instance, they found the development of digital portfolios fostered teachers' reflection and confidence, although they also were "disorienting" in that students described feeling "inept" and "confused" (Stansberry & Kymes, 2007, p. 492) in the early stages of digital portfolio development. Further investigation of these negative feelings might have resulted in a better understanding of the impact of the digital portfolios on the teachers, in addition to strategies they could employ to help them better support their own students in developing digital portfolios.

Although the studies in this review demonstrated several benefits when inservice teachers created digital portfolios, most of the studies were small-scale (ranged from $N = 8$ to $N = 78$ participants; e.g., seven of the studies $N \leq 20$ and in two studies $N \geq 44$). The investigations mostly occurred via credit-bearing courses in university settings and in graduate education programs (Beck et al., 2005; Milman & Kilbane, 2005; Pitts & Ruggirello, 2012; Romano & Schwartz, 2005; Stansberry & Kymes, 2007). Only one study (Boulton, 2014) involved investigating teachers in the field, and outside the context of a teacher education course.

Studies of inservice teachers and digital portfolios show a need for more research that is broader in scope, has a larger sample of participants, and takes place outside of a university setting.

Purpose and Research Questions

The purpose of this study was to examine high school teachers' perceived impact on their teaching and their students' learning resulting from the creation of digital portfolios by both the teachers and their own students. The main research questions were:

1. What are teachers' perceptions of the impact, if any, of digital portfolios on their teaching?
2. What are teachers' perceptions of the impact, if any, of digital portfolios on their students' learning?

Methods

This mixed methods study examined the perceived impact of the implementation of digital portfolios by 29 high school inservice teachers and their students, representing 20 school districts within a state in the United States. This study employed a QUAN + QUAL "concurrent triangulation" (Creswell, Plano Clark, Gurmann, & Hanson, 2003, p. 229) mixed methods design. Studies that employ this design involve the simultaneous collection of both qualitative and quantitative data.

Context

This mixed methods study investigated the impact of a two-year statewide, competitive grant project. The project involved the creation of digital portfolios published on the Internet using Sakai, an open-source web-based portfolio tool.

During Stage 1, teachers from different high schools across the state met in the state's capital five times to participate in face-to-face professional development workshops. During this time, they learned about the digital portfolio development process (Kilbane & Milman, 2003) from a consultant hired by the funding agency. They also learned to use the Sakai tools by creating their own digital portfolios, participated in discussions, and accessed online resources. Over a period of 10 months, the teachers created digital portfolios that contained nine snapshots bringing together various artifacts (e.g., multimedia presentations, photographs, digital video, animations, and classroom teaching materials) that demonstrated growth in their ability to integrate technology effectively over time. The teachers wrote a reflective statement using a framework

developed by Brown and Irby (2001) that communicated their professional thinking about each artifact and its significance to practice.

During Stage 2, which occurred over the summer and during the subsequent academic year, the same teachers involved in Stage 1 implemented a plan for using digital portfolios in their own classrooms to support student learning. A consultant and the grant's project manager assisted each teacher in identifying specific goals for the integration of digital portfolios and assisted them in formulating specific action steps. A consulting firm developed Sakai digital portfolio templates to meet each teacher's individual project specifications.

There were considerable differences in the ways each teacher implemented digital portfolios to support student learning. Some teachers used digital portfolios to help students organize their work in a showcase format, while others used them to facilitate students' understanding of how specific assignments linked to curriculum standards, and still others used digital portfolios to promote students' reflection and learning. Other differences existed as well in the teachers' efforts at implementation, including: the numbers of students involved, subject areas and grade levels represented, amount of time utilized, types of technologies integrated, and total number of weeks dedicated to digital portfolio development. Although differences existed, there was uniformity in the allocation of funding from the grant for equipment and other support tools ($20,000.00 per site) used for the creation and organization of the digital portfolios (i.e., Sakai) and reflection prompts students used in the portfolios.

During Stage 2, the teachers received online professional development opportunities that supported their efforts and presented the details of their implementation at a statewide technology conference held 12 months into Stage 2. A final grant meeting was held during this conference that enabled the teachers to debrief on their participation in the project with each other and the grant administrators.

Participants

The study's participants were the 29 high school (grades 9-12) teachers who participated in the digital portfolio competitive grant project. They represented 20 different school districts across the state. Selection for participation in the grant was based on the merit of proposals submitted by the teachers in these school districts. This process identified quality proposals that represented the diverse districts and regions from across the state and also teachers from varying school environments (i.e., rural, suburban, urban, and different socioeconomic levels). Nine of the participants were male and 20 were female. Their teaching experience ranged from three to 30 years and

all could be considered typical in their skill level related to technology skills and proficiency.

Data Sources and Analysis

The data used in this study was gleaned from the participants' responses to prompts on a 14-item questionnaire. The questionnaire was administered in-person and on paper at the final grant meeting held during Stage 2 of the project after participants had been involved for 20 months. It was administered as a part of the grant evaluation process and was completed by all of the participants in the study (100% response rate). Although participants could have chosen not to participate in the study, they all agreed to participate. The quantitative methods involved descriptive statistical analyses of the teachers' responses on the questionnaire. Five of the questions required answers on a Likert scale, as follows: 5 = *to a great extent*, 4 = *to a large extent*, 3 = *to a moderate extent*, 2 = *to a small extent*, 1 = *not at all*, and 0 = *NA*. These questions also included sub-items. Seven questions required a yes/no response. Although only one of the questions required an open-ended reply to the statement—"Please add any other comments you may have"—the other 13 questions had space for open-ended commentary. The questionnaire's content validity was achieved through review by two researchers. The two researchers also recommended the format of the questions.

The qualitative portion of the study involved analyses, using the constant comparative method (Glaser, 1965), of 301 unique comments in response to open-ended sections of the questionnaire. The four stages of this method involve

1. "comparing incidents applicable to each category,
2. integrating categories and their properties,
3. delimiting the theory, and
4. writing the theory." (Glaser & Strauss, 1967, as cited in Lincoln & Guba, 1985, p. 339)

To analyze the qualitative data, first major categories for investigation of the dimensions of the teaching and learning process were identified. Next comments related to each category were analyzed, and properties or themes were identified as they emerged. Comments within these themes were grouped together and analyzed for common ideas or properties. These properties were analyzed, and the meaning in these themes was summarized. Two researchers working independently applied these methods and then compared preliminary findings. These findings were then refined upon discussion and deliberation. The goal of discussion was to create themes based on the comments provided by the participants in the study that

would explain their perceptions, refine the themes, and answer the major research questions.

Results

This study examined the perceived impact of creating digital portfolios on teachers and their students. Both quantitative and qualitative findings indicated that the digital portfolios had a generally positive impact on teachers, the teaching-learning process, and their students.

Quantitative results from several items in the questionnaire are presented in Tables 1 and 2. Table 1 provides quantitative information about the impact of digital portfolios on teachers. Table 2 indicates the impact of digital portfolios on the dimensions of teaching and learning addressed in the study, using a simple "yes" or "no" as a possible choice.

The study's qualitative findings resulted from analysis of 301 individual comments offered in response to each of the items on the questionnaire that contained a prompt soliciting additional comments or suggestions. Two major themes emerged from these comments. They were classified into the following categories: (1) teacher learning and pedagogy; and (2) student learning, reflection, and assessment.

Theme 1: Teacher Learning and Pedagogy

The theme teacher learning and pedagogy centers on the learning teachers experienced resulting from the development of their own digital portfolios, as well as changes they made or planned to make regarding their pedagogical practices. Teachers indicated that using digital portfolios required a greater amount of time, challenged them to rethink existing planning and teaching practices, made teaching and students' products more interesting, engaged students more in their own learning, incorporated more 21st century skills, and fostered a teaching and learning environment that was more rewarding yet also frustrating. It was frustrating because the technology tool (Sakai) did not always work as they thought it should. By developing their own digital portfolios, teachers learned about using technology and improving their lesson planning. For instance, one teacher summed up technology-related learning: "The biggest impact of the entire process is the increased ability to use various forms of technology efficiently in the classroom." Similarly, the impact of digital portfolios on teachers' learning was also evident in their responses about lesson planning, as the following teacher's comment illustrates:

My lesson plans and the way I presented them has improved. After 28 years of teaching I forgot or neglected to do certain steps that are important to the success of a lesson. This was a great way for

me to get back to the basics. I have also encouraged other faculty members to create a digital portfolio with their students.

In this comment, it is evident the teacher learned and reexamined "anew" the necessary steps in the planning and teaching of a lesson.

Digital portfolio development also seemed to impact teachers' pedagogy, too. The development of digital portfolios promoted increased use and integration of technology, as one comment highlights: "My class became centered around technology and so all of my lesson plans had to be changed to incorporate it. The students also used technology every day which was a new experience for them." This comment illustrates a shift in pedagogical practice: it incorporated technology to a higher degree. However, teachers' changed practice also involved better and more timely communication with students, as another comment shows: "I was able to more clearly and quickly respond to their learning and they were better able to see their errors and improve their responses as it was clearly on their screen." Teachers also described how their teaching of academic content standards improved because the digital portfolio process made them more intentional about creating assignments that were responsive to standards.

Through the creation of their digital portfolios, teachers and students engaged in a reciprocal process of learning, in which teachers and students alike "struggled together to learn and create," as one comment affirmed. Two other responses echoed this sentiment: "I was able to share my successes, failures, and frustrations with them. They were able to view me as a fellow learner in this pilot project"; and, "My students could see that I 'practice what I preach.' They understood I wasn't asking them to do anything I hadn't done myself." These comments show the teachers recognized students were learning with them and that the students appreciated their teachers as learners who could empathize with them because their teacher had also "been there."

Theme 2: Student Learning, Reflection, and Assessment

Another major theme concentrated on student learning and reflection, as well as assessment. Generally, teachers expressed that through the creation of digital portfolios, students learned academic standards, developed self-assessment and reflection skills, and engaged more with content because they were motivated to learn. The following comment captures the integrated nature of this theme:

Through their reflections (required as part of the digital portfolio development process), the students

Table 1
Impact of Digital Portfolios on Teachers

As a result of your participation in the grant, to what extent has each of the following been enhanced for you?	*M*	*SD*
a. Knowledge about digital portfolios	4.52	0.68
b. Ability to create and use a digital portfolio	4.45	0.67
c. Ability to teach your students how to create a digital portfolio	4.31	0.65
d. Ability to use and integrate technology	4.14	0.88
e. Attitude towards using technology in the classroom	4.24	1.10
f. Collaboration with other teachers in or outside your school in the use of educational technology	3.93	1.10
g. Ability to coach/ support colleagues in the use of educational technology	4.00	0.95
h. Additional ways for collecting, storing, and sharing artifacts to demonstrate your or your students' growth and achievements	4.24	0.77

Note. N = 29

Table 2
Impact of Digital Portfolios on Dimensions of Teaching and Learning

Question	Yes	No
1. Did using a digital portfolio with your students have any effect on your teaching or planning for teaching?	96.6%	3.4%
2. Did using a digital portfolio change how or how much your students learned?	79.3%	20.7%
3. Do you think your students learned academic content standards differently through the use of digital portfolios?	72.4%	27.6%
4. Was using digital portfolios with your students important?	89.7%	10.3%
5. Did this project have any effect on your relationship with your students?	62.0%	38.0%
6. Did creating a digital portfolio yourself have any impact on your implementation of digital portfolio s with your students?	93.1%	6.9%

Note. N = 29

were required to look at the content standards and comment on which standards they had grasped and which they still needed improvement with. This allowed for a new understanding of the standards for the students. They also completed writing assignments within the genres required by the state requirements.

This statement shows that reflection, understanding (learning), and standards were all a part of the process for students to create their own digital portfolios. A critical component of student learning featured in the comments was teacher understanding of student learning such as comprehension of students' thinking and misconceptions. This was evident in numerous quotes, but especially in this one:

The portfolio alerted me to misconceptions students still held despite having completed the learning activities. I was able to modify instruction to ensure their understanding before they took the test. Their test performance improved as a result of this increased feedback.

This comment shows that teachers examined the students' learning processes in their digital portfolios, which also illuminated any misunderstandings they might have experienced that needed explanation and correction. In many ways, the development of digital portfolios changed not only how teachers planned, but also how they assessed or intended to assess their students, including how they viewed assessment. They did not perceive assessment as a thing, but rather a process that should also be showcased. Similarly, another statement reflected a change in teacher learning about assessment focused on more thoughtfulness as the following comment captures: "Using the portfolios did cause me to reexamine my methods of assessment."

Discussion

This study demonstrated that the development of digital portfolios by both inservice teachers and their students can impact them positively in a variety of ways, ranging from increased teachers' learning about technology and a reexamination of their pedagogy to

better comprehension of student learning, reflective processes, and assessment. Although several of the study's findings are similar to other studies that investigated digital portfolios and preservice (e.g., reflection) and inservice teachers (technology skills), this study demonstrated how digital portfolios benefited teachers, as well as possibly their students. Through analysis of teachers' responses, it appeared that both teachers and their students reaped benefits from creating their own digital portfolios because they were engaged in a process of self-reflection and creation, a process that stemmed from mutual understanding that each individual has similarly experienced this learning process. Also, teachers explained that the creation of digital portfolios by themselves and their students resulted in reciprocal learning process, in which both teachers and students engaged in learning from and with one another. Contrary to Stansberry and Kymes's study (2007), the teachers in this study not only developed their own digital portfolios, but they also supported students in developing theirs, too. By requiring their students to develop digital portfolios, these teachers reexamined the role of assessment and the ways in which they viewed assessment of students.

Limitations

This study has several limitations. First, the sample was limited to only 29 high school teachers within one state. Inclusion of more teachers from different grade levels, content areas, and states/countries might have different results. Second, the data reported in the quantitative section of this paper uses only descriptive statistics and is unable to determine whether there is any statistical significance to these data. Third, the study presents self-report data. This type of data, although it speaks to the teachers' perceptions of their participation, has limited reliability. It is also important to note that the participants' perceptions of their experiences are subject to internal bias due to numerous factors—for example, they may be inclined to feel an inflated sense of the impact resulting from digital portfolios because they feel positively about receiving funding and support from participation in the grant. Fourth, the study focused on teachers' and students' learning from the teachers' perspective. Future research should examine students' learning from their perspective, as well as the reciprocal learning process and its implications, particularly with regard to how it develops vis-à-vis the creation of portfolios by teachers with their students. Research examining the co-creation of digital portfolios by teachers and their students might provide new insights into the teaching-learning process, as well as foster deeper comprehension of teachers, their students, and their relationship to one another.

Conclusion

The use of digital portfolios in teacher education has grown exponentially across the United States; however, most of the published research centers on preservice teacher education rather than inservice teachers, even though research has shown many benefits for preservice teacher education. Considering the benefits evidenced in preservice teacher education research, it seems logical that inservice teachers—and their students—would also benefit from the creation of their own digital portfolios. Digital portfolios could be used as a form of long-term professional development for teachers. Yet, few studies have investigated inservice teachers and digital portfolios, and even less the creation of digital portfolios by inservice teachers and also their students. This study illustrated that the teachers participating in this study considered that the development of digital portfolios by themselves as well as by their students affected their own teaching practice and their students' learning positively. It also resulted in reciprocal learning between teachers and students. Further study is needed for examining digital portfolios as vehicles for inservice teachers' professional development and their students' learning. Finally, additional efforts by SCDEs and school districts to embed digital portfolios as long-term professional development tools for inservice teachers may reap similar benefits as those already realized by preservice teachers who have engaged in digital portfolio development. Therefore, portfolios should be considered as a strategy for inservice teacher professional development.

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