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Preparedness Portfolios and Portfolio Studios: Supporting Self-Authoring Engineers

Brook Sattler and Jennifer Turns
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In this work, we engaged engineering undergraduate students in constructing an ePortfolio. The purpose of the research presented here was to explore the question, "If and in what ways do students report experiencing the construction of a preparedness portfolio in a portfolio studio as an opportunity to develop into self-authoring individuals?" The findings of this study suggest that the ways in which students reported experiencing the construction of a preparedness portfolio in a portfolio studio aligns with movement toward self-authorship, which indicates that this ePortfolio activity supports and challenges student development toward self-authorship. These findings contribute to the evidence-base for the use of ePortfolios in higher education. Furthermore, this study demonstrates the broad applicability and usefulness of self-authorship to guide educational practice through understanding (a) how this ePortfolio activity (and other ePortfolio activities) can connect to opportunities for fostering student development toward self-authorship; and (b) how self-authorship can be used to understand students' descriptions of their experience in this ePortfolio activity (and other ePortfolio activities).

The many demands of modern life, such as complex thinking and problem solving, connect to objectives of higher education: "Advocates of educating the whole student have argued for years that emotional, social, and cognitive development are equally important aspects to consider in creating effective learning environments" (Haynes, 2006, p. 17). However, in teaching, more concrete and immediate issues, such as institutional requirements and accreditation, are often prioritized.

In connecting to this call for educating the whole student, this research uses development throughout the lifespan, specifically socialization and self-authorship (Kegan, 1994), to understand students' experiences constructing a preparedness portfolio in a portfolio studio (i.e., five sessions in which engagement with ePortfolio-related tasks was scaffolded; for more details about this ePortfolio activity, see Turns, Sattler, Eliot, Kilgore, & Mobrand, 2012). According to Kegan (1994), a socialized mind is one that has come to align with the values and beliefs of others—*looking outward* for one's values and beliefs. A self-authoring mind, in contrast, has subjected its own values and beliefs to inspection and has consciously chosen what to value and believe—*looking inward*. Self-authors have taken on the responsibility of deciding for oneself, having internal authority. This shift involves developing more complex ways of making meaning of the world.

Attributes of self-authorship, such as thinking critically, recognizing the complexity of knowledge, relying on personal values and beliefs, and engaging in mutually respectful relationships with others, connect to the mental demands of modern life. For example, an individual who thinks critically can consider multiple perspectives when reasoning. In the professional world, a self-authoring individual can grapple with ethical issues in light of his or her own beliefs. Even further, in a world that is increasingly becoming defined by intercultural communication (King & Baxter Magolda, 2005) and globalization (Jarvis, 2007), individuals must be able to "manage complexity and engage multiple perspectives" (Baxter Magolda & King, 2004, p. xviii). These attributes of a modern citizen represent the ability to address such problems in light of one's personal and professional values and beliefs, which are fundamental to being a self-authoring individual.

Self-authorship connects to attributes that higher education aspires to impart to learners (Baxter Magolda, 2000, 2003, 2004b; Kegan, 1994, 2000; King & Baxter Magolda, 2005). For example, a goal of higher education is to instill in future leaders the ability to solve complex problems, deal with ambiguity, self-initiate, be responsible for personal experiences, participate in interdependent relationships, and participate in groups (Baxter Magolda, 2008). These objectives of higher education link to concerns about the transferability of academic skills to a professional context. While initially constructed more broadly with respect to adulthood (Kegan, 1982, 1994), self-authorship has primarily been researched and applied within college-student development (Baxter Magolda, 2000, 2001, 2003, 2004a, 2004b, 2008; Haynes, 2006; Pizzolato, 2003, 2004, 2005, 2007; Torres, 2003; Torres & Baxter Magolda, 2004).

Working in our own research where we seek to understand how to support college student development toward self-authorship, we recognized an opportunity to explore and understand preparedness portfolios and portfolio studios (Turns et al., 2012) through the lens of self-authorship. Using self-authorship to understand this ePortfolio activity is significant because research suggests the profound nature of ePortfolios (e.g., Bryant

& Chittum, 2013; Eliot & Turns, 2011; Nguyen, 2013; Parkes, Dredger, & Hicks, 2013; Turns et al., 2012). However, most of these studies focus on one aspect of student development, such as identity (Eliot & Turns, 2011), learning (Nguyen, 2013), lifelong learning (Sattler, Kilgore, & Turns, 2010), or reflection on past experiences (Parkes et al., 2013). While these areas are important in their own right, in our work we noticed that they do not completely capture the profound impact students reported about their experience constructing an ePortfolio. We recognized an opportunity to explore and understand it through a broader perspective, such as self-authorship. Given the importance of attending to student development, understanding preparedness portfolios and portfolio studios through the lens of self-authorship fills an important gap in providing

> empirically-based evidence for [ePortfolio's] adoption . . . Although the theoretical foundation for ePortoflio use is strong, it is not sufficient to justify widespread use. As ePortfolio use continues to grow and valuable time and resources are being invested in this fairly new pedagogical tool, it becomes even more important that we have empirically-based evidence for its adoption. (Bryant & Chittum, 2013, p. 190)

Our research is a response to calls for more empirically-based evidence supporting the use of ePortfolios (e.g., Bryant & Chittum, 2013; American Association of Colleges & Universities, 2014; Rhodes, Chen, Watson, & Garrison, 2014).

Conceptual Framework

The purpose of this section is to outline the conceptual framework of self-authorship. In this section, we (a) present the origins of self-authorship; and (b) describe why we could anticipate that students would move toward self-authorship from their participation in this ePortfolio activity.

In his work, Kegan (1984, 1994, 2000) has demonstrated the importance of continued development throughout a person's lifespan, connecting to how adults are continuously dealing with the hidden curriculum of life in domains such as work, relationships, and parenting. He explored these areas of life as an opportunity to suggest the importance of how people make meaning of and engage with the world around them. Kegan (1994) described how individuals, without continued development, are unable to deal with demands of the modern world, leaving them "in over their heads" (p. 5). Attributes of a self-authoring individual include, but are not limited to, the ability to analyze critically and evaluate problems, formulate an identity, learn independently, engage in interdependent mature relationships, embrace and value diversity, consider multiple perspectives, collaborate, self-initiate, be responsible for one's own experiences, and handle ambiguity (Baxter Magolda, 2001, 2008; Kegan, 1994).

Kegan (1994) described fundamental shifts in how people make sense of the world around them, which represents the development of more complex ways of making meaning of the world—a movement from socialization to self-authorship. While Kegan (1994) acknowledged that socialization is an accomplishment because that means an individual has learned to play by the rules, he noted that self-authorship is being able to engage in the world. He described these shifts along three dimensions—cognitive, intrapersonal, and interpersonal. Along the cognitive dimension, there is growth from viewing knowledge as right or wrong and dependent on an authority figure to recognition of knowledge as complex and contextual and viewing the self as able to contribute to the construction of knowledge. The intrapersonal dimension represents one's identity and shifts from an externally defined identity to one that is internally defined. Along the interpersonal dimension, relationships change from dependent to more interdependent and become defined by mutuality (i.e., the ability to see others' perspectives).

Kegan (1994) described movement toward self-authorship in terms of a transformation in which individuals step outside of their experiences, observe them, and *have* them (i.e., self-authorship) versus being *had* by their experiences (i.e., socialization). These changes in the ways in which people interact with and interpret their experiences can be characterized as a shift from looking outward to looking inward. While Kegan (1994) proposed a more complex theory about development throughout the human lifespan, for the purposes of this paper the focus will be on the journey toward self-authorship—a journey defined by a movement from looking outward to others as authority figures to looking inward and trusting oneself as an authority figure.

In his work, Kegan (1994) explored these developmental ideas as a part of adulthood. In bringing this work to college student development, Baxter Magolda (2001) examined college student development over the course of a longitudinal study of undergraduates into adulthood. Her early work suggested that there is little evidence that college experiences push students toward self-authorship during college. Rather, her research provided strong indication of the evolution toward self-authorship later in life, when college students graduate and are faced with the ambiguities of life, asking questions, such as "Who am I?" and "What are my contributions to the world?" (Baxter Magolda, 2001). Other research has suggested that specific groups of students may progress

toward self-authorship earlier and that certain types of experiences may better support student development toward self-authorship. Torres and Baxter Magolda (2004) suggested that underrepresented populations (e.g., Latino) may progress toward self-authorship because they encounter cognitive dissonance earlier in their academic careers. In recognizing that development toward self-authorship is possible in the undergraduate years, scholars have been exploring the ways in which higher education can support students' development toward self-authorship more explicitly (Baxter Magolda et al., 2007).

Baxter Magolda's (2001) early work sheds light on the importance of attending to student development. Her more recent work focuses on the need for education to find a balance between support and challenge in order to support student development (e.g., Baxter Magolda, 2004b; Meszaros, 2007; Pizzolato, 2003, 2004, 2005). The goal is to "propel students toward self-authorship by creating contexts whereby formulas for success are not readily available" (Pizzolato & Ozaki, 2007, p. 198). Contexts built on these suggestions require students to depend on their own secured internal voice and therefore have the potential to disrupt students' current ways of making meaning. In these situations, students will either fit the disruptions into their current ways of making meaning or adjust to more sophisticated ways of making meaning (i.e., self-authorship). In supporting students' development along the cognitive dimension, educators should portray knowledge as complex and socially constructed. In scaffolding activities that encourage student engagement in identity work (i.e., intrapersonal), educators must position students at the center of knowledge-construction activities. To help students develop along the relationship dimension (i.e., interpersonal), educators should share authority and expertise in the mutual construction of knowledge. Our research adds to the community's understanding of how to construct educational practices in order to support student development.

As a first step in exploring the evidence-base for ePortfolios, it is important to understand why we could anticipate that students would move toward self-authorship after constructing a preparedness portfolio in a portfolio studio. We provide this evidence by connecting this ePortfolio activity to suggestions about how to foster the development of self-authorship. According to scholars (Baxter Magolda, 2001; Kegan, 1994), a balance of support and challenge is critical when trying to foster students' development toward self-authorship. It is possible to see how this ePortfolio activity has the potential to support and challenge student development toward self-authorship along all three dimensions (i.e., cognitive, intrapersonal, and interpersonal). Along each development dimension, it is possible to see students engaging in different learning activities that have the potential to support development toward self-authorship: (a) cognitive: making a portfolio, understanding what counts as engineering; (b) intrapersonal: presenting oneself as an engineer, internalizing the engineer as an identity; and (c) interpersonal: giving and receiving portfolio feedback, interacting with other engineers.

In this ePortfolio activity, our pedagogical approach is to provide a structured, yet flexible work environment—in other words, "liberating constraints" (Davis & Sumara, 2006). This pedagogical approach connects to supporting and challenging self-authorship development because it helps students learn how "to choose from among multiple alternatives" (Baxter Magolda & King, 2004, p. 42). While there is no "right" way to construct an ePortfolio, students are given guidance on various aspects, such as word count and format. For example, in connecting to the cognitive dimension, making an argument about one's preparedness is defined by ambiguity—there is no right way. The purpose of such guidance is to catalyze students' engagement in the making of an ePortfolio, which can help them focus on in-depth issues rather than surface logistics. As noted in our previous research, this ambiguity removes the comfort afforded by external formulas (i.e., being told exactly what to do and how to do it by an authority figure) and requires students to grapple with ambiguity (Turns et al., 2012).

The example above provides a detailed illustration of how constructing a preparedness portfolio in a portfolio studio has the potential to support and challenge self-authorship development along the cognitive dimension. It is also possible to connect this ePortfolio activity in detail to the other two dimensions (i.e., intrapersonal and interpersonal). In linking this ePortfolio activity to suggestions for supporting and challenging self-authorship development, we can begin to see why students can move toward self-authorship as a result of engagement in this ePortfolio activity. These connections offer reasons to explore the merits of this ePortfolio activity as a mechanism to support student development, specifically development toward self-authorship.

In this work, we explore the question, "If and in what ways do students report experiencing the construction of a preparedness portfolio in a portfolio studio as an opportunity to develop into self-authoring individuals?" Through this research question, we aim to understand (a) how this ePortfolio activity (and other ePortfolio activities) can connect to opportunities for supporting student development toward self-authorship, and (b) how self-authorship can be used to understand students' descriptions of their experience in this ePortfolio activity (and other ePortfolio activities). In the following sections, we describe this research in more

detail through an outline of our research approach, study findings, discussion, and concluding remarks.

Method

In this study, we used the lens of self-authorship to investigate how engineering undergraduate students experienced constructing a preparedness portfolio in a portfolio studio. In this section, we provide (a) a description of this ePortfolio activity, (b) the participants, (c) data collection, and (d) data analysis.

The ePortfolio Activity: Preparedness Portfolios and Portfolio Studios

The key elements of the preparedness portfolios are preparedness statements, in the form of arguments with written explanations (i.e., statements, artifacts, and annotations). The key elements of the portfolio studio are scaffolding activities; validating students' process; and understanding students' reactions. For more details about these elements, see Turns et al. (2012).

Invited engineering undergraduate students (students at the focus of this study) constructed an argument about their preparedness for a future activity in the form of an ePortfolio. Typically, students chose to make claims about their preparedness for industry; some students used the portfolio as an opportunity to demonstrate their preparedness for undergraduate and graduate school programs. This research focused on what happened when engineering undergraduate students created life-wide engineering preparedness portfolios—students were encouraged to draw portfolio content from all life experiences (e.g., classroom, work, co- and extra-curricular activities, and personal experiences). Scaffolding for this ePortfolio activity was provided in the context of a portfolio studio, an interactive social environment that was semi-structured, with the goal of facilitating students through the process of creating an ePortfolio.

Participants

The findings presented in this paper represent the experience of six participants constructing a preparedness portfolio in a portfolio studio (see Table 1 for participant demographics). Early observations of their engagement with this ePortfolio activity suggested diverse experiences. For example, there were indications that some students found the portfolio experience meaningful and helped them understand their past experience better, while for other students, there were suggestions that the portfolio helped them grapple with their future. These observations were made through watching the students' engagement in the portfolio studio and conducting a preliminary analysis of the data.

Data Collection and Analysis

The data collection and analyses were grounded in prior work on self-authorship, specifically exploring passages that suggest reference to looking inward and looking outward (Baxter Magola, 2001; Baxter Magolda & King, 2007; Sattler, Turns, & Mobrand, 2012).

Data collection. All participants completed a post-survey in the fifth and final portfolio studio session. This survey had a variety of open and close-ended questions that generally targeted participants' experiences in this ePortfolio activity (e.g., "What are your chief take-aways from this experience?") and then targeted questions about self-authorship (e.g., "Did the portfolio contribute to your sense of empowerment?"). Both Baxter Magolda's (2001) Longitudinal Self-Authorship Interview and the Wabash National Study of Liberal Arts Education Interview (Baxter Magolda & King, 2007) provided strong foundations for developing the data collection instruments used to explore this ePortfolio activity. In an effort to target the dimensions (i.e., cognitive, intrapersonal, and interpersonal), data collection questions were formed with an eye towards dimension. Other data collection questions targeted the concept of self-authorship as a whole (see Appendix). The questions in the instruments represented a range of questions probing the movement toward self-authorship and/or markers of a self-authoring individual.

Participants were interviewed within a month of participation about their experience constructing a preparedness portfolio in a portfolio studio. The post-survey and post-interview were purposely designed to include the same questions. Participants had an opportunity to grapple with the topic area on their own in the post-survey (i.e., a personal time and space to respond). The post-interview allotted time for the interviewer to elicit further answers to survey responses, as well as to explore new issues that arose during the interview. This design provided an opportunity for triangulation across data points.

Data analysis. The focus of data analysis was on understanding students' experiences in this ePortfolio activity in relationship to their development toward self-authorship. A constructivist grounded theory approach was used to make sense of the data: (1) define what is happening in the setting; (2) narrate participants' individual experiences; (3) compare stories of the research participants; and (4) acknowledge and test assumptions (Charmaz, 2000). This approach aligns well with the data analysis approach suggested by self-authorship scholars Baxter Magolda and King (2007), which involves "identifying meaningful units of conversation, labeling those units to

Table 1
Participant Demographics

Participant	Department	Year	Race	Gender	Enter status
Faith	Applying to ME & MSE	Junior	White	Female	Traditional
Ben	ME	Senior	White	Male	Returning
Eric	MSE	Senior	White	Male	Traditional
Anna	Human Centered Design & Engr.	Senior	Multi-racial	Female	Traditional
David	ChemE	Junior	White	Male	Traditional
Carl	CE	Senior	White	Male	Traditional

convey their essence in terms of meaning making, and sorting the labeled units into categories that portray the key themes" (p. 504).

We attended to issues of credibility, dependability, and transferability to ensure a high level of research thoroughness through the use of data triangulation and disconfirming evidence (Devers, 1999). Using this approach, we maintained a detailed chronology of all decisions, conducted a skeptical peer review, and clearly outlined the study context so that readers could judge transferability.

Possible Study Limitations

In general, it is important to recognize challenges associated with studying and measuring self-authorship (Baxter Magolda & King, 2007; Pizzolato, 2007). Baxter Magolda and King (2007) attributed these challenges to the complexity of the construct: "The complexity of this evolution requires a complex approach to assessment" (p. 494). Further, the study of self-authorship is challenging to observe because it is an internal process—a process that researchers strive to make visible through either asking individuals about life experiences or observing behaviors. According to Baxter Magolda and King (2007), this type of study is even more challenging because

> as King (1990) noted, assessment is complicated because individuals often use more than one meaning-making structure at a time, and prefer (recognize as better) statements using reasoning structures that are more complex than what they are able to produce independently. (p. 495)

Results and Discussion

The findings suggest that the ways in which students characterized this ePortfolio activity align with supporting their self-authorship development in multiple ways along all three dimensions (cognitive, intrapersonal, and interpersonal). In each of the findings presented, first there is a description of the finding with student quotes, then a commentary about how the finding and quotes connect to self-authorship through the "looking inward, looking outward" exploration.

Becoming Proud and Assessing Progress: Connected to the Intrapersonal Dimension

The ways in which students described their experience constructing a preparedness portfolio in a portfolio studio was most often characterized in language that mapped to intrapersonal statements (i.e., identity-related talk). All students had multiple instances of describing their experience in this ePortfolio activity that aligned with the intrapersonal dimension. Students described the process of building a preparedness portfolio as an opportunity to engage with their professional identity, specifically (a) contributing to their sense of pride in their past accomplishments and (b) providing an opportunity to assess their engineering preparedness.

Becoming proud. All students described the experience as contributing to a growing sense of pride in their past accomplishments. Students characterized the process of looking back on their past experiences in light of their future goals as helping them to recognize important aspects of their past accomplishments. For example, Carl described this sense of pride as developing from his accomplishments seeming more real: "I am also more proud of my accomplishments because they seem more tangible." Another student, David, acknowledged how the process of building his preparedness portfolio in a portfolio studio contributed to his respect for his past work:

> Um, a couple of the artifacts I pulled off . . . I included a research paper I wrote about super conductivity for my chemistry class last year, and it sort of it made me respect the work we did in class quite a bit more. Just looking back on it and seeing what I accomplished was kinda cool. I didn't think much of it at the time.

Looking outward, looking inward. From the previous quotes, we can see both Carl and David looking inward and acknowledging their own accomplishments. It suggests that preparedness

portfolio construction provided them with a mechanism and that the portfolio studio provided them with a designated space and appropriate scaffolding to become aware of their experiences. In transitioning from looking outward to looking inward, we can see their sense of pride coming from within, rather than from external sources. We can see this growing awareness as mapping onto Baxter Magolda's (2001) description of the process elements of the journey to self-authorship—trusting the internal voice, building an internal foundation, and securing internal commitments. These students became aware of their past experiences, which in turn created a sense of pride that contributed to their ability to trust their competencies as emerging engineering professionals.

Assessing progress. Some students reported that a significant benefit of their participation constructing a preparedness portfolio in a portfolio studio came from assessing their progress. It provided them with an opportunity to assess where they have come from and where they are going. Students described recognizing and articulating their personal growth. Carl reported this assessment: "[Construction of a preparedness portfolio in a portfolio studio] was a chance to assess my progress instead of blindly stumbling forward." Eric described realizing how his artifacts represent a growth in his knowledge and ability:

> While looking for artifacts, I found that my earlier coursework was indicative of an "elementary understanding" of basic academic principles. In contrast, my recent coursework demonstrates exceptional proficiency in comparison with my "starting point" and really suggests tremendous academic improvement. From a retrospective standpoint my earlier coursework was just a "warm-up" for what I am currently doing in my courses. When retroactively looking through coursework from several years ago, an individual really begins to see their improvement on a personal scale.

Looking outward, looking inward. In the previous quotes, we can see Carl and Eric acknowledging the significant role that the construct of a preparedness portfolio in a portfolio studio played in helping them assess their engineering progress. It provided them with a mechanism and space to step outside their engineering experiences and assess their engineering progress. According to Kegan (1994), the ability to move looking outward to looking inward represents the capacity to reflect on something, understand it, and "have it" rather than being "had by it." In this case, we can see students begin the process of shifting from being "had by" their engineering progress to "having it." This transformation aligns with the ways Kegan (1994) and Baxter Magolda (2001) described the fundamental shift from a socialized mind to a self-authoring mind.

Seeing Experiences as Engineering: Connecting to the Cognitive and Intrapersonal Dimensions

All of the students discussed at least one experience in this ePortfolio activity that related to the cognitive dimension. For example, they reported dealing with what counts as knowledge demonstrating one's engineering preparedness. Many students described broadening their conception of engineering knowledge. On the surface, this finding connects to the cognitive dimension in that students are engaging with what counts as engineering knowledge. When these students are making judgments about their own engineering knowledge, it begins to represent the interpersonal dimension because of the personal nature. We can see these as connecting to the intrapersonal; however, this presentation of findings and associated discussion focuses on connections to the cognitive dimension of self-authorship.

Broadening conception of what counts as engineering. Students began constructing a preparedness portfolio with a focus on representing their claims through evidence connected to technical experiences (e.g., internships and co-ops). We can see a shift in students' conceptions of what counts as engineering knowledge. The ways in which some students described their experience suggests that participating in this ePortfolio activity helped them broaden their conception of what counts as engineering knowledge. For example, when asked about her most important decision in constructing her preparedness portfolio, Anna reported including a specific non-engineering artifact as engineering evidence:

> My most important decision was to include the t-shirt design. I was unsure of how it would be received because it was totally not engineering related. I was going to scrap it and use another artifact. I received lots of good feedback from my peers and included the t-shirt design. I am so happy with the decision!

Looking outward, looking inward. In the above passage, the way in which Anna characterized her experience represents a broadening of her conception of what counts as engineering knowledge. She was able to look inward at her experiences and shift the ways in which she views her engineering knowledge from a dualistic understanding (e.g., traditional technical engineering experiences vs. non-engineering experiences) to a more contextual understanding. A broader conception of what counts as engineering knowledge represents a self-authoring mind because

self-authoring individuals can draw connections between different contexts.

Further broadening their conception of what counts as engineering. When asked about his decision-making process for choosing artifacts, Ben initially depicted the process as easy because he did not have much to choose from: "I didn't actually eliminate any. I picked everything I could think of, which wasn't much. So I didn't have to decide." Later in the interview, Ben reported that as he progressed through this ePortfolio activity, he was able to connect other experiences, such as construction work, to his engineering preparedness. Like other students, throughout the course of constructing a preparedness portfolio, he conveyed a continual engagement with thinking broadly about all of his experiences in relationship to his future in engineering. Ben described the realization of having more engineering experiences:

> Coming up with artifacts. It took me a long time to think around, like connect things, and I knew I had done stuff, but I didn't think it connected in any way . . . to engineering in a way that like an employer might want to look at, so realizing that a lot of it could link up took a little bit of work.

He went on to describe this shift as positive: "I like the last artifact I found, my house remodel project. I realized that even though it wasn't an engineering project, working on a large project like that showed off some skills that are important for engineers to have." He acknowledged how he now could recognize how remodeling a house provided evidence of his engineering preparedness:

> So it ended up being a little over a yearlong project. We started in June of 06 and we finished, I think it was August of 07, so, um so, you know, when I was doing it, I'm thinking I tear stuff apart, I put it back together, I get paid. But now reflecting back on it, I see that was very much like an engineering project, where you need to come up with timelines, and kinda connecting it to my 395 class, design process, where you, where you have to come up with work flowcharts and things like that to make sure you meet deadlines and things get done, and then certain things can't be done until something else is done, so . . . you know, you can't get the . . . insulation in there until the plumbing and the electrical is in there and things like that, so it was stuff I didn't have to think about too much on that project, because I had a more experienced partner. But . . . I did learn a lot, and reflecting back on it I learned how much I learned and how similar it was, and then I'm applying things I'm learning now to how I could have done it better, more efficiently, and how I can use that experience in the future . . . to plan projects that are going to be, you know, longer projects.

Looking outward, looking inward. We can see the above quotes as a representation of Ben beginning to broaden his conception of what counts as engineering knowledge. He described being able to connect this knowledge to his engineering preparedness. Ben characterized this realization in the following way: "[The construction of a preparedness portfolio in a portfolio studio] showed me that I have several accomplishments that are relevant to a career in engineering." Initially we see Ben "picking all" his experiences as representative of his engineering preparedness because he was choosing experiences that were canonical to experiences that demonstrate engineering preparedness. In looking outward, Ben described relying on experiences that were externally defined by the engineering community (i.e., internships, course-work). As he continued through this ePortfolio activity, we see a shift in how he defines what counts as engineering knowledge, which is more internally defined, more looking inward.

Interacting With Others: Connecting to the Interpersonal Dimension

All of the students reported at least one experience that was related to the interpersonal dimension. Primarily these comments dealt with their interactions in peer review, both the positive and negative aspects. On the surface, these comments may seem related to peer review only; however, there is evidence that the ways in which students described peer review connects to an opportunity for students to learn how to engage in meaningful mutual relationships with others.

Peer review: Interacting with others. In describing peer review interactions, some students noted wanting more critical feedback, while other students recognized the difficulty of providing such feedback. When describing the challenges associated with giving feedback, Eric said:

> Um, [peer review] was difficult for me in the sense that I tried to avoid being vindictive. I, you know, I had strong English abilities in elementary school, middle school, high school, I was always identified as a gifted writer. And as a result, I kind of tend to always assume that I'm right. So when you're peer editing someone's writing and they're commensurate in education level to you, it's very different in the sense that when you say this is wrong, it I don't know, it's harder to kind of say

> I'm right and you're wrong, because they might be right and I might be wrong . . . It's more like we're on equal terms, so I would more like be discussing an issue as opposed to just taking a red pen and saying, no, you know.

Looking outward, looking inward. On the surface the previous quote represents how Eric reported experiencing challenges associated with peer review. However, this quote demonstrates Eric's deeper engagement, looking inward to provide feedback based on his values and beliefs, while also considering others' values and beliefs. This quote represents how he described grappling with understanding others' perspectives within the context of providing feedback that would help them improve their writing, while also remaining true to his own viewpoint—a marker of a self-authoring individual along the interpersonal dimension.

Peer review: Interacting with others in new ways. Some students desired deeper feedback; however, they were still able to leverage the peer review by seeing how others approached constructing a preparedness portfolio. Anna described giving feedback as beneficial because

> You can learn a lot about other people, just like about their experiences, which is cool, and also like if you see how they structure or organize something in a certain way and you really like it, you can use it, too. It can be helpful if you're like unsure about how to organize something.

David also described how giving feedback provided him with an opportunity to see how others approached constructing a preparedness portfolio. In addition, he recognized how this process contributed to his ability to edit others' work:

> Oh, it's I learned I got some good ideas for what I wanted to show, not necessarily in specific but just how people threw things together, and it's always nice to have editing practice. It's a good skill to have.

Looking outward, looking inward. From David and Anna, we can begin to see that their experiences in peer review align with how a self-authoring individual would approach interacting with others in peer review. It is promising that these students recognized peer review challenges, which begins to connect to a mindset of a self-authoring individual. As Baxter-Magolda (2001) noted, the bridge toward self-authorship begins with an awareness. In the above quote, we can see Anna and David looking inward and becoming aware of challenges associated with peer review.

Concluding Remarks

This study explored the question, "If and in what ways do students report experiencing the construction of a preparedness portfolio in a portfolio studio as an opportunity to develop into self-authoring individuals?" This study investigated this question by examining students' reports of their experience in this ePortfolio activity through the lens of self-authorship, specifically looking for instances where their language mapped onto movement from looking outward to looking inward. The empirical findings suggest that these students experienced the construction of a preparedness portfolio in a portfolio studio as supporting and challenging their development toward self-authorship. The empirical findings presented here imply that students' descriptions of their experiences in this ePortfolio activity were personal, diversified, and aligned with the three developmental dimensions (i.e., cognitive, intrapersonal, and interpersonal).

This work demonstrates the possibility of using self-authorship to understand the impact of an activity and to assess how others can approach such an endeavor to understand their own activities and pedagogies in new ways. In this work, we mapped self-authorship onto ePortfolios to appreciate the significant nature of ePortfolios, specifically preparedness portfolios in a portfolio studio. Characteristics of this specific instantiation of ePortfolios that map onto a self-authorship support mechanism are: scaffolding activities; validating students' process; and understanding students' reactions. For more details about these elements, see Turns et al. (2012).

This ePortfolio activity also has the potential to support and challenge student development through processes of trusting, building, and securing an internal voice—one bridge to self-authorship, as described by Baxter Magolda (2008). This is done through mechanisms such as scaffolding decisions about portfolio content; providing a safe environment; and engaging students alongside one another and in self-evaluation. This study extends the research (e.g., Baxter Magolda, 2004b; Meszaros, 2007; Pizzolato, 2003, 2004, 2005) about how to construct educational practice to support student development; the extension is to a new pedagogy (i.e., preparedness portfolios and portfolio studios) and a new discipline (i.e., engineering education).

The findings of this research provide empirical-based evidence to support the use of ePortfolios in learning. While others (e.g., Taylor & Haynes, 2008) have used self-authorship as a theoretical perspective to guide curriculum development in which ePortfolios were an outcome, to our knowledge our study is the first empirical demonstration that ePortfolios offer an opportunity to support students' development toward

self-authorship. This study demonstrates the broad applicability and usefulness of self-authorship as a perspective to guide educational practice and assess educational endeavors.

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Appendix
Survey and Interview Questions

Interview	**Developmental dimension targeted**
01. What are your chief take-aways from this experience?	All
02. Thinking back on your experience with portfolio development this quarter, what was the most surprising thing about it?	All
03. What was the most rewarding thing about it?	All
04. What was easy or enjoyable about creating your portfolio?	All
05. What was the most challenging or unpleasant thing about creating your portfolio?	All
06. Please describe the aspects of your portfolio you like the most.	All
07. Please describe the aspects of your portfolio that you like the least, besides the Catalyst or Google formatting limitations.	All
08. How would you change your portfolio if you worked on it more in the future?	All
Learning environments	
09. What expectations did you have when joining the portfolio studio? Did your experience align with these expectations? Please explain.	All
10. In what ways was the portfolio experience different from the rest of your undergraduate coursework?	Cognitive
11. In what ways was the portfolio experience similar to the rest of your undergraduate coursework?	Cognitive
12. What is your view of an ideal classroom environment that is conducive to your needs? In this environment, what is the role of the educator? What is the role of the student? How do you feel when the educator evaluates you or your work?	Cognitive, Interpersonal
13. Did the portfolio studio align with this view? If yes, please explain how? If no, how could it better align?	Cognitive
14. People have said that working on the portfolio influences how they view the courses they have taken or plan to take. Is this true for you?	Cognitive
15. How useful was working on portfolio in regard to current coursework, future plans?	Intrapersonal, Cognitive
16. How does creating a portfolio compare to other things you have done?	Cognitive
Interactions with others	
17. Describe your interactions with peers in the portfolio studio.	Interpersonal
18. Describe your experiences with peer review, both receiving and giving feedback. What did you gain from these activities?	Interpersonal
19. How do you deal with encounters with people who hold different views from yourself?	Interpersonal
20. During the portfolio studio, did you encounter people who held views different from yourself? If yes, how did you handle the situation? If no, how would you hypothetically handle the situation?	Interpersonal

21. Do you think that you handle these types of situations (encountering people with different views) differently since participating in the portfolio studio?	Interpersonal
22. Generally, do you think the portfolio activity has better prepared you to work in teams?	Interpersonal
23. Do you think the portfolio has made you more open to others' ideas?	Interpersonal
24. Often when working in groups, people offer up ideas that the group does not take up; has this happened to you? Please explain the situation, your attitude, and feelings. Do you think this portfolio experience has influenced how you would respond to such situations in the future?	Interpersonal
25. Describe a time you were advised to take a certain course of action, but didn't agree with this path and wanted to take another path. Do you think this portfolio experience has influenced how you would respond to such situations in the future?	Interpersonal
26. Describe a situation when you felt like you were being pulled in different directions. Do you think this portfolio experience has influenced how you would respond to such situations in the future?	Interpersonal
Decision-making	
27. Think about the various experiences that you revisited or reflected on during this term. Select one that stands out to you, and tell me about it. What was the experience, and what types of thoughts did you have while you were revisiting or reflecting on it?	Intrapersonal, Cognitive
28. Describe the decision-making process of choosing a specific artifact. How did you decide on the artifact? Why this artifact over other artifacts?	All
29. In retrospect, are you surprised by any of the artifacts you included in the portfolio? Tell me a little more about that.	Cognitive, Intrapersonal
30. In a situation where information is not clear cut, how do you go about making a decision? OR How do you make decisions in the face of conflicting information?	All
31. What was the most important decision you made while developing your portfolio? What was the decision? What were your options? Are you pleased with the decision?	Cognitive, Intrapersonal
Dilemma	
32. Please describe a dilemma you have faced in life. Describe how you experienced the dilemma, who was involved, and how you handled it. If you were to face the same dilemma now (after the portfolio experience), do you think that you would respond differently?	Intrapersonal, Interpersonal
Thinking process	
33. Did this professional portfolio activity get you to think? If yes, please explain in what ways. If no, explain why not.	Cognitive
34. Has this experience led you to think differently about or approach other learning experiences at the university in new ways? Explain.	Cognitive
35. People have said that working on the portfolio makes them think differently. Is this true for you?	Cognitive
36. Do you believe that your experience creating a portfolio has resulted in a change in your values, beliefs, opinions, or expectations? Please explain.	Cognitive

37. Tell me a story about one of the most significant learning experiences you had while here at the UW. What was it about this experience that made you identify it as one of your most significant learning experiences? What did you learn? Why do you think you learned so much? How do you think you will use what you learned in the future? Who was involved in the experience, and what were their roles?	All
38. What do you see as the relationship between knowledge and truth?	Cognitive
Future and preparedness	
39. Do you intend to complete a major in engineering?	Cognitive
40. If someone were to read your portfolio, would they think you were ready to work in industry or to attend graduate school?	Cognitive, Interpersonal
41. In your opinion, would the artifacts and annotations in your portfolio convince others of your readiness for industry or graduate school?	Cognitive, Interpersonal
42. In your opinion, would your professional statement convince others of your readiness for industry or graduate school?	All
43. Some students report learning about themselves and even being impressed by their accomplishments (gaining confidence); did this happen to you? Please explain.	All
44. Sometimes we've heard that creating the portfolio creates tensions between what one wants to do and what one should do. While creating the portfolio, did you experience any tensions like this one? Please explain.	Interpersonal
Comfort level	
45. Students have described having different comfort levels with the portfolio process and studio; could you talk about your comfort level? What made you comfortable? What made you uncomfortable? How did you get over the discomfort?	All
46. Have you experienced other situations where the comfort level was similar to the portfolio? If yes, could you explain the situation, what you did, what was different, the same?	All
Closing	
47. Did the portfolio contribute to your sense of empowerment? Please explain.	Intrapersonal
48. Is there anything else that you think is important for me to know to understand how you experienced the portfolio studio?	All

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A Holocaust Exhibit ePortfolio: Actively Engaging Students

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California State University, Fresno is currently considering implementing an ePortfolio requirement for all undergraduate students. The ePortfolio requirement would be introduced primarily to engage students in a HIP (high impact practice) but would also be used for assessment purposes. As a faculty member and a member of the CSU Fresno ePortfolio committee, I implemented an integrative learning ePortfolio assignment in order to gauge the degree to which students could be engaged in their own learning process by using ePortfolios and to pilot the use of such assignments for assessment purposes. Students in History 140 created an ePortfolio that was constructed as a museum exhibit on a specific topic related to the Holocaust. This exhibit project was an ideal way to measure the impact of ePortfolios because the Holocaust course was designed and had been taught previously by the same instructor. Therefore, since the most significant change to the assignment was the use of ePortfolios, changes in student engagement or the quality of the exhibit project would be suggestive and might be able to be linked to the use of ePortfolios.

In spring of 2013, an ePortfolio committee was created by the Dean of Undergraduate Studies at California State University, Fresno in order to consider the possibility of introducing an ePortfolio requirement for all undergraduate students. This committee included a faculty member serving on the University General Education (GE) Committee, two additional faculty members (one of whom had experience using ePortfolio) and an instructional designer. I volunteered to be on this committee because I had been considering using ePortfolios in my own courses. My primary interest was in investigating the ways in which ePortfolios had been used before and in exploring the ways in which they might be used by Fresno State students. This ePortfolio committee attended the American Association of Colleges & Universities Summer Institute in Madison, Wisconsin in June 2013. While there, the group created a proposal for implementing a campus-wide ePortfolio initiative. The summer institute provided detailed information, both a theoretical and practical, related to ePortfolios.

The Fresno State ePortfolio committee discussed how ePortfolios could be used by students to document their learning across multiple courses taken to meet GE requirements. The instructors of individual courses, as well as departments and programs, could also use assignments submitted to student ePortfolios to assess student performance. Artifacts submitted to student ePortfolios over the course of several years could be used to measure the value added or improvement in students' comprehension of the material at different points in their educational experience. First Year Experience instructors used the Digication platform to implement a community service project that involved creating an ePortfolio. During the fall 2013 semester, the university put out an official call, and faculty and administrators attended presentations and were given temporary accounts so that they could try out all five of the ePortfolio platforms that had submitted proposals and were being considered. Ultimately, the campus awarded the contract to Pathbrite, and it became the universal campus e-portfolio platform. Prior to introducing a requirement for all students, the ePortfolio committee concluded that it would be necessary to pilot the use of Pathbrite ePortfolios in certain courses.

I offered to pilot Pathbrite in one of my upper-division history courses during the spring 2014 semester. The purpose of the pilot was to have students create an ePortfolio that demonstrated their ability to apply their knowledge in a sophisticated way, to increase their level of engagement or investment in the project, and develop their awareness of their own learning process. The primary aim was to try and measure the impact that ePortfolios had on students' engagement and performance.

Theoretical Framework

The *instruction paradigm* is a system in which the primary emphasis at the College or University is on the faculty member conveying specific information to students. In this model, the instructor provides knowledge, often in the form of lectures, instead of teaching students to acquire knowledge themselves. Furthermore, in this kind of system little emphasis is placed on how students learn or to what extent they are able to process information; students are able to earn degrees by completing the required number of courses that cover content without ever having to demonstrate that they have successfully processed or applied that knowledge (Tagg, 2003). Ever since I entered graduate school in the 1990s, I have been aware of the persistence of the instruction paradigm even as individual professors, departments, and a few campuses have introduced significant innovations. Tagg (2003) examined this issue and reasons for the continuation of the instruction paradigm, despite results from numerous

studies demonstrating that this approach has not been sufficient to address the needs of students currently enrolled in colleges and universities. Most faculty genuinely care about their teaching and want to be effective instructors. However, they may not utilize the most effective practices or be willing to embrace innovations. Furthermore, the very structure of educational institutions centered on three-unit courses makes it difficult to introduce, sustain, and replicate successful innovation practices (Tagg, 2003). Not all innovations are equal, and innovations by individual professors or even entire departments are unlikely to transform an entire campus. Nevertheless, innovations and the implementation of best practices campus-wide do have the potential to transform educational experiences at universities (Kuh, 2008). Furthermore, it has been established that strategies and innovations that create certain conditions do have a positive impact on student performance and that these practices can make an incredible difference for the students in the classes that adopt them. Evidence from several studies evaluating the use of ePortfolios has demonstrated an increase in student achievement in sections of courses assigning ePortfolios (Eynon, Gambino, & Török, 2014).

Students perform better on academic tasks when they are actively involved in the learning process, when they are aware of and asked to evaluate their own performance, and when they are sufficiently motivated to do well (Gardiner, 2002). These conditions are most likely to be met when professors implement teaching practices and develop learning outcomes that are student centered rather than instructor centered (Allen, 2004; Driscoll & Wood, 2007). There are several strategies and specific practices that can be used to achieve this aim, but practices that compel students to apply their knowledge and to take increased responsibility for their own learning are preferable. Assignments that require students to think critically can also be used to engage students in their own learning and to improve one of the skills crucial to their success in completing their degree (Facione & Gittens, 2013). Instructors using problem-based and integrative learning approaches have successfully engaged students and required students to apply their knowledge. According to Ithaca College, "integrative learning is the process of making connections among concepts and experiences so that information and skills can be applied to novel and complex issues or challenges" (Ithaca College, n.d., para. 1).

Approaches centered on critical thinking and integrative learning pre-date the modern technological revolution that has led to the increasing use of technology by faculty and students. I had introduced integrative learning and projects that required the application of knowledge into my courses before the advent of the computer age. However, the integration of technology and integrative learning approaches has led to the development of specific programs that have expanded the options for professors who want to pursue such approaches. While the development of different forms of a learning management system (LMS) enabled students to access materials and submit assignments remotely and at any time, the way in which students and professors accessed and viewed these assignments was not really very different. Platforms that allow students to create digital portfolios are one example of the fusion of technology, a student centered focus, and an integrative learning approach that has enabled professors to shift more of the responsibility for learning to the students. This technology has also provided new ways for students to create and interact with assignments.

ePortfolios assignments or requirements have been implemented at numerous institutions, and there is an increasing amount of evidence documenting their effectiveness and showing that they are a High Impact Practice (Cambridge, Cambridge, & Yancey, 2009). Penny Light, Chen, and Ittelson (2012) stressed that

> the ability to document learning in ePortfolios affords the broader educational community within higher education with a potentially richer set of tools and practices to address the needs of not only today's learners but also the complex problems faced by our ever-changing society. (p. 23)

I was interested in using ePortfolios in part because "one of the main goals of ePortfolio work is to develop students who are intentional and integrative learners" (Penny Light et al., 2012, p. 25). Reflection is a key aspect of promoting self-aware and integrative learning, and many ePortfolio assignments have included reflective essays (Barrett, 2004). Furthermore, integrative learning is more important than ever for our current students, since few individuals stay in one position or pursue only one career during their lives. In order "to succeed in multiple, changing environments, students must develop the intellectual flexibility and adaptability to incorporate varied sources of information into their decision-making and understanding of the world" (Ithaca College, n.d., para. 4).

Methodology

In the spring of 2014, I required students in my upper-division History 140 (The Holocaust) course to create an ePortfolio. For several reasons, this was an ideal course in which to pilot an ePortfolio requirement. It was an upper-division major course, so students had completed their GE requirements and had attained a

basic proficiency in critical thinking and information literacy. Furthermore, by the time students begin taking major courses, most of them will have used and submitted assignments to Blackboard (Fresno State's LMS), and thus it should be easier to teach them how to use Pathbrite (the ePortfolio platform). Finally, this course had been designed and taught as a project-based course by the same instructor previously, and so the only major aspect of the course that would change would be the introduction of the ePortfolio requirement. It would therefore be possible to compare the level of student engagement with the level of student engagement in previous semesters, when students had completed the Holocaust Exhibit Project but had used poster-board or constructed models. The use of reflections would also enable the instructor to evaluate students' awareness of their own learning process.

This was a pilot and not a formal research project; hence, it does not meet all of the requirements for an empirical study. However, a comparison of information obtained from direct and indirect assessment methods does suggest that students were more engaged during the semester that they used Pathbrite to create ePortfolio exhibits. For the fall 2014 semester, I intentionally kept the guidelines and requirements for the Holocaust Exhibit Project as close as possible to the offering of the same course in fall 2013. The historiography paper guidelines and grading criteria were the same, and the paper was worth 100 points each semester. The sample size was relatively small, and the number of students in the two classes was slightly different (41 students in spring 2013 and 38 students in spring 2014), so I did not do a true *t* test. I did divide the student grades into eight categories and compared the scores on the historiography exhibit paper for the spring 2013 and spring 2014 semesters. I found a very high degree of correspondence in the distribution of grades on the Exhibit Paper in the Holocaust course for the two different semesters.

As Table 1 indicates, in several areas the same number of students received a grade in the same category (within five points of one another), and in all but one category the number of students in each category for spring 2013 and spring 2014 was different by only one student. While this is not conclusive evidence, it does strongly suggest that overall the students in the course during the two different semesters had roughly comparable abilities and performed at approximately the same level on one part of the Holocaust Exhibit Project.

Prior to assigning grades during both the spring 2013 and spring 2014 semesters, I used the same four criteria to evaluate and score the actual Exhibit portion of the project. I also had the student I hired and trained to assist me with my duties as the College Assessment Coordinator review the student ePortfolios and score them. I did not create or use a formal rubric during the spring 2013 semester; instead, I described each of the criteria and evaluated the exhibit projects according to these four criteria. During the spring 2014 semester, I created a formal rubric and gave this to students in place of the handout describing the criteria that I had used previously. The exhibits were evaluated based upon the artifacts included, the integration of the artifacts into a meaningful exhibit, the diversity of the exhibit, and the extent to which the required sources and citations in Turabian format were present. The criteria used during both semesters can be reviewed in rubric form in Appendix A. The average score on the exhibit part of the project was a 3.1 during the spring 2013 semester, and the average score was a 3.5 during the spring 2014 semester. This is a relatively small difference, but it suggests that the use of ePortfolios had a slightly positive impact on the exhibit project scores.

I also wanted to evaluate the quality of the ePortfolios in and of themselves, not just in terms of whether students had created a coherent exhibit. I used a modified version of an ePortfolio rubric and scored a random selection of ePortfolios to determine their overall quality. Since students had never created a multimedia exhibit before, it was not possible to compare the scores from previous and current ePortfolios. There were 38 students total in the Holocaust course during the spring 2014 semester, and I reviewed 20 of the ePortfolios. The student assistant also used the ePortfolio rubric to score the same 20 exhibit ePortfolios. The ePortfolios were evaluated based on three criteria (selection of artifacts, use of multimedia, and quality of reflections), and students were expected to have a rubric score of three out of four in all three areas. Out of the 20 ePortfolios reviewed, 17 met the expectation in terms of selection of artifacts and use of multimedia, but only 14 of met the expectation in all three areas. Lower scores in the third area were a result of the fact that several students did not have reflections of a sufficiently high quality. In my experience, very few history students at Fresno State had written this kind of reflection before, and it is likely that this had a negative impact on the quality of these reflections. In the future, I will provide more detailed guidelines and a more specific example for students to review before writing their own reflections.

Assignment

The assignment consisted of three parts: (a) a historiographical paper focused on an assigned topic; (b) an exhibit created as a Pathbrite ePortfolio; and (c) and a presentation in which students showed the entire class their ePortfolios. The historiographical paper exhibit was a four to six-page paper that required students to analyze four scholarly works on their

Table 1
Grades Received by Students on Historiography Exhibit Paper, Separated by Term

	Number of students with each grade	
Grade	Spring 2013	Spring 2014
F (below 60)	1	1
D (below 70)	2	2
Low C (75 or below)	9	9
High C (76 or above)	7	6
Low B (85 or below)	4	5
High B (86 or above)	5	3
Low A (95 or below)	9	9
High A (96 or above)	4	3

Note. Scores are out of 100 points. Spring of 2014 polled 41 students. Fall of 2014 polled 38 students.

assigned topic. Students had to discuss the thesis and key points of each work, as well as comment on the extent to which the different scholarly works agreed or disagreed in regard to key aspects related to their issue or topic. After a brief one paragraph introduction providing some background on the issue, students focused on the four sources for the rest of the paper. Students also had to evaluate the sources that each of their works had used and to compare the strength and weakness of the main argument in each work. This paper was virtually identical to the one assigned in History 140 prior to the use of Pathbrite ePortfolios. The only real difference between the assignments was that students submitted the word document to Pathbrite instead of turning in a printed copy or submitting it to Blackboard.

The presentations, which took place during the second to the last week of the semester, were focused on the exhibits that students had created. However, instead of telling their classmates about the artifacts (e.g., images, documents, or objects) they had chosen and how the museum would be designed, students showed the entire class their ePortfolios. Students explained why they had chosen the artifacts they had and indicated why they had been arranged in a certain way and what if any features of the museum itself would be part of the exhibit. Despite the visual nature of the presentations, these brief descriptions of the exhibits explaining how they were designed followed the same guidelines and were very similar to the presentations in previous sections of this course that did not use ePortfolios.

The part of the assignment that changed extensively due to the use of Pathbrite was the creation of the exhibit itself. In the past, students had arranged printed photos, articles, and brief paragraphs providing background on poster board or had built a model and written a paper explaining how the artifacts and other materials would be presented to visitors. During the spring 2014 semester, students were required to use Pathbrite and to create a virtual and multimedia Holocaust Exhibit. There are screenshots of examples of exhibit projects in Appendix B. Students were responsible for creating a well thought out and coherent museum exhibit in which all of the objects included were relevant and had a specific purpose. The exhibit as a whole did not include a traditional historical argument with a thesis, as would a research paper, but the exhibit was thematic. Furthermore, the exhibit was required to include specific artifacts and to be designed in such a way as to impress upon visitors key points about the specific issue on which the exhibit was focused. Both the syllabus and the handout with additional guidelines stated that a random collection of 12 items would not earn a passing grade, even if all 12 items were related to the student's topic in some way.

The assignment was very structured, so that students had to include certain kinds of artifacts and provide citations. Nevertheless, students were not only allowed but expected to design the museum and the presentation of the objects and to explain why certain objects were included and how the exhibit would convey an understanding of the issue to visitors. The exhibit had to include 12 separate items, and each of them had to be tagged (given a title that identified each item in an appropriate way). At least half of the items (a minimum of six) had to be excerpts from primary sources or photos of primary source objects, two of the items had to provide background information relevant to the topic, and one had to be an excerpt from a newspaper article. The last three items were chosen by the student; the only requirement was that they had to be relevant and clearly identified. In addition to creating an exhibit, students also had to design the museum or physical structure in which the exhibit would be displayed. Students were strongly encouraged to be creative and to include specific architectural or other special features in the design of their museum building. Many museums include these kinds of features, which are an integral part of the story the museum is telling. For example, the Holocaust Museum in Washington, DC has a room on the ground floor with

an eternal flame that represents and honors the millions of victims who were murdered during the Holocaust. The WWI Museum in Kansas City, Missouri has a glass walkway from the entrance hall to the exhibit hall that enables visitors to look down on a field of artificial red poppies. These features are part of the architecture of the buildings but convey the same messages as the artifacts that are being displayed.

Evaluation of Exhibits

It is important to emphasize that for the project itself, students had to analyze sources and apply their content knowledge on a specific topic, such as Dachau or the SS, in order to create an exhibit. The exhibit was required to include primary sources, images, a newspaper article, and excerpts from documentaries or propaganda films that would provide an in-depth understanding of key issues for members of the general public. Students could not just search on Google for images, articles, and videos because submitting an exhibit with 12 random items would not result in a passing grade for the assignment. The exhibit had to reflect the student's research, and each of the artifacts had to relate directly to all of the others and be woven together in a meaningful way. The experience in viewing the entire exhibit had to be more significant than the experience of viewing the separate items, and even the design of the museum had to be inextricably linked to the narrative.

Students used Pathbrite to create digital ePortfolios that could be viewed as though one were walking through an exhibit and were required to describe each item and have a Turabian citation to each source or website. Overall, the quality of the ePortfolios was very high, and students were able to take what they had learned during class sessions and apply it to independent research. Students constructed an exhibit in which all items were connected and collectively provided a meaningful interpretation of one aspect of a significant historical event. Furthermore, most students indicated that their overall experience using Pathbrite and creating the exhibit was positive, aside from some technical issues, although a few made negative comments. I have included both positive and negative comments in the excerpts from the reflections included in Appendix C, but approximately 87% of the comments were positive, while only 13% were negative. Thus the excerpts included do not give an accurate picture of the overall comments; instead, they provide examples of the kind of positive and negative feedback that was received.

Summary and Discussion of Student Reflections

Students turned in a required student reflection in which they discussed the exhibit project and the use of Pathbrite to create an ePortfolio. The actual student comments quoted in Appendix C provide an idea of the language and emphasis in the reflections, but since only a few reflections are quoted, I will summarize the overall impressions gained from the reflections. The reflections described how students selected the items for the exhibit and created their ePortfolios and also included their reactions to using Pathbrite. Thus, these reflections provide indirect assessment data about how students perceived their own learning and what they thought were the strengths and weaknesses of their work and of the ePortfolio platform. More than 80% of the student reflections indicated that the students thought they had applied their knowledge of the subject on which the exhibit was focused effectively and created a meaningful presentation/exhibit. More than 70% of the students commented that they had "enjoyed" or been very "interested" or "worked very hard" on the exhibit portion of the assignment, and most students stated that they were more engaged in or enjoyed creating the exhibit more than writing the historiography paper. A few students emphasized that it was very challenging to create a meaningful exhibit and that they spent as much time and effort on the exhibit portion of the assignment as they did on the paper. At least a dozen students indicated that they wished they had spent more time on the project or begun working on it earlier instead of waiting until right before the due date, as they did with other papers and assignments. Nearly all of the students indicated that they had a positive experience with Pathbrite and that they really enjoyed creating the exhibit. A few students indicated that writing the reflection made them think more about their own work and thinking process. Collectively, these reflections or informal surveys suggest that students were engaged and that the use of ePortfolios actively engaged them in both applying their knowledge and in thinking about their learning experiences. However, since students had not written this kind of reflection previously and had only commented on the course as a whole, it is not possible to conclude that they were engaged to a much greater degree than during previous semesters, when they had created exhibits using poster board.

Conclusion

As discussed previously, this was the third time I had taught the Holocaust course. The readings, assignments, and Holocaust Exhibit Project were all either the same or very similar to those used in previous semesters. Deliberately introducing only one real change to the course made it more likely that any difference in student attitudes or performance was due to ePortfolios, since the course was consistent in all other ways with previous sections of this course.

Introducing ePortfolios was a major challenge however, and I had to devote three entire class periods to reviewing the guidelines for the ePortfolio assignments and demonstrating how to use Pathbrite. I had previously only spent only one class period discussing the assignment, so two additional class periods were devoted to issues related to the exhibit project. Most of this additional class time was spent on giving students an overview of the Pathbrite ePortfolio system and discussing other technology related issues. Although most of the extra class time and assistance was focused on teaching students about the technology, we did spend some additional time reviewing websites and viewing examples of documentaries that would be acceptable to include. Thus, there was a little more emphasis on the exhibit project assignment during the spring 2014 semester than during previous semesters, and this may have had an impact on the quality of the ePortfolio exhibits. I used the historiography papers and ePortfolio exhibits to evaluate the extent to which students could apply their knowledge and express an in-depth understanding of their issue in a way that the general public could understand and appreciate. I used the in-class presentations and one-page reflections to evaluate student engagement and awareness of their own learning process.

As discussed in the Methodology section, in terms of the quality of the historiography papers, an assignment that did not change at all between semesters, the performance of students in the class during the spring 2014 semester was virtually identical in terms of grade distribution to that of students in previous semesters. This suggests that the students enrolled in the course in this semester were roughly equivalent to those who had been enrolled in the course during the spring 2013 semester. However, there was a difference in the performance of students in the spring 2013 and spring 2014 semesters in terms of the overall quality of the exhibits. The exhibits were evaluated based on the same four criteria in the spring 2013 and spring 2014 semesters, and there was a 0.4 increase in the average score for the spring 2014 semester when students used ePortfolios. This is a small increase, and as noted the exhibit was discussed and perhaps emphasized a little more than in previous semesters, but it does suggest, if nothing else, that students were engaged and able to create effective and meaningful ePortfolio exhibits. The successful engagement of students is also suggested by the comments in student reflections. Nearly all students made extremely positive comments about the exhibit assignment, many students indicated they had spent extensive time and thought putting the exhibit together, and most had a very positive experience using Pathbrite. Again, students had not written this kind of reflection previously, and so some difference between comments during the spring 2013 and spring 2014 semesters is predictable. However, students in both previous sections of the Holocaust class had written out an evaluation of the class and had been told to comment on the exhibit project; the comments in regard to the exhibit had not been as favorable in previous semesters which is suggestive but not conclusive. As the instructor, I also noticed that more students than previously had asked if they could include more than the minimum number of artifacts in their exhibit; I had the impression that the exhibits by students who did not receive an A or a B were more coherent than in previous semesters, but this could not be verified, even if I had kept all previous exhibit projects, because the exhibit was in a different format, which might have had an impact on my impressions.

However, the degree to which students had to engage actively in thinking while creating their exhibit was definitely much greater than in previous semesters. While students had previously identified and used images and included references to documentaries and films, they had not been able to incorporate these kinds of materials into their exhibits fully, and thus they primarily described them in their paper and designated where in the exhibit these films would be viewed. Creating a Pathbrite ePortfolio, in which these kinds of materials were embedded and could and be viewed by the instructor as part of the exhibit, required students to engage more actively with the artifacts. Students determined the exact segment of the documentary or film that should be shown and how that specific information was connected to and furthered the impact of the exhibit as a whole. This required students to apply previous knowledge and connect it to the new knowledge. One student in their ePortfolio exhibit project was able to connect specific facts or knowledge about the views and actions of Germans and Nazi SS forces during Kristallnacht (i.e., the Night of the Broken Glass) with the views of Jewish individuals who witnessed this event and survived the Holocaust and to juxtapose these perspectives with interpretations of the event put forward by academic historians. This student also designed a feature for the museum that had visitors walk through a street with smashed and looted stores and glass everywhere in order to represent the final destruction of a Jewish life that been steadily eroded by Nazi Policies since 1933. Thus, the project required students to acquire or improve their integrative learning skills, and their level of proficiency could be measured by evaluating their final exhibit ePortfolio.

Although the results of the comparison between the Holocaust course pre- and post -use of ePortfolios is not conclusive, it is suggestive. Furthermore, both the instructor and the students had the impression that the level of engagement by students while creating the exhibit ePortfolio was very high. This level of

engagement and the slight improvement in the quality of the exhibits demonstrates the potential of complex and integrated learning-centered assignments such as exhibit ePortfolios to transform students' experiences and increase their success. During the spring 2015 semester, I will be assigning the exhibit ePortfolio in the Holocaust course again, and I will be focusing on increasing student agency. It is imperative that students not just understand the content but that they develop the skills to further their own knowledge and that they understand as well the learning process. Requiring students to select artifacts for the exhibit and to integrate these exhibits into a meaningful entity compels them to apply their knowledge and to engage actively in the learning process. When students are also asked to write a reflection, they focus to a greater extent on the decisions that they made in order to discuss and explain their thinking process.

While I will use the same criteria to grade the exhibit project, I will discuss and provide specific examples of very creative ePortfolio exhibits that go beyond demonstrating knowledge and conveying meaning. I will also review criteria for reflections and require students to reflect on how they chose sources for their historiography paper and on how they organized and selected information for this paper prior to writing their reflection on the exhibit project. These changes to the assignment are designed to increase the degree to which students are responsible for their own learning and to make them reflect in a much deeper way upon their learning. The use of ePortfolios for this kind of project-based assignment is ideal because it enables students to design their own multi-media exhibits without extensive training and because it requires them to think about and identify the connections between the artifacts they have identified.

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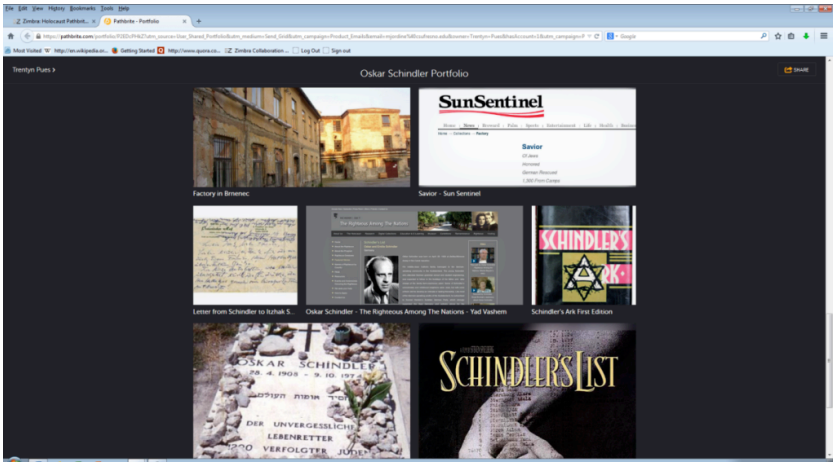
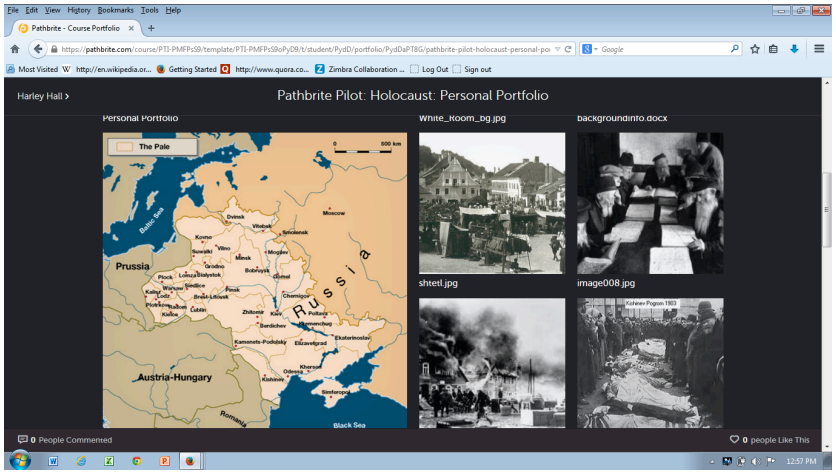
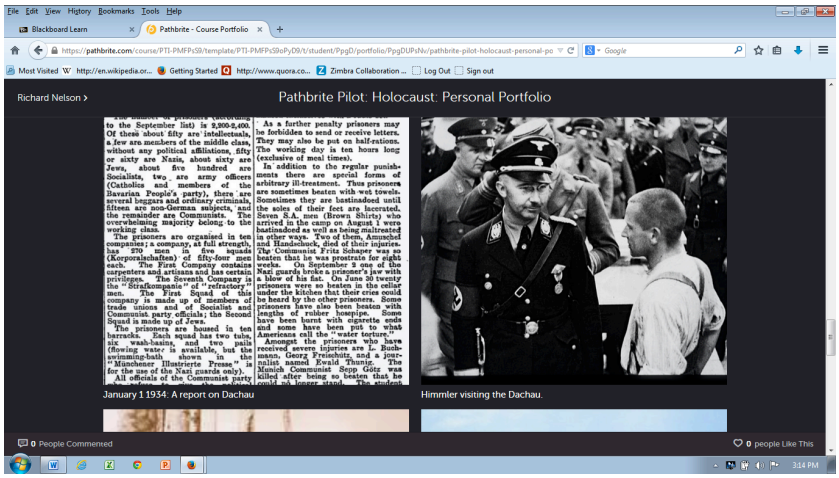
Appendix A
Holocaust Exhibit Project Rubric

ARTIFACTS Exhibits are required to have 12 items. All items must be clearly identified and directly relate to the topic as well as to each other.	The required number of artifacts are present and they are both significant and directly related to narrow topic.	The required number of artifacts are present but they are not all related to narrowed topic.	Less than 12 artifacts or artifacts that are not significant and/or do not relate to each other.	Only a few artifacts that are relevant and/or relate to each other
INTEGRATION Every item selected for the exhibit is significant not just in and of itself but significant because it connects to all other items in the exhibit and together they tell a compelling and coherent story. Most topics had to be narrowed down from the broadest subject, and all objects should relate to the more narrow topic.	Diverse array of artifacts that relate to each other and tell a coherent and compelling story.	Artifacts tell a story but it is not entirely clear or compelling	Artifacts do not all connect to each other and do not tell a story that is entirely clear.	Artifacts are not related to exhibit topic or each other. The artifacts are not different from each other and do not connect at all or clearly tell a story.
DIVERSITY Exhibit should be creative and should be original, as opposed to a replica of an existing museum exhibit. A diverse array of artifacts, including text, images, video, and descriptions of museum features, should be included.	Different kinds of artifacts are used, including newspaper articles, original documents or testimonies, images, videos, descriptions of museum features, etc.	Only one or two kinds of artifacts are included, and/or most of the exhibit is text.	Exhibit does not have all items, and the artifacts included are very similar and only represent one or two kinds of items.	Either less than 12 items or items that are not directly related and also are not different kinds of items.
SOURCES & CITATIONS Each artifact must be labeled and have a Turabian citation (except for YouTube videos). The source of the information, image, or video must be credible, and so it is better to use Museum and scholarly websites, as opposed to individuals' web pages. Be sure, if you use an image or documentary, that you know it is identified correctly, authentic, and – in the case of documentaries – objective.	Sophisticated and credible sources and correct citations (Turabian).	Credible sources and citations that are correct or have only minor errors (e.g., a period instead of a comma).	Sources are not credible and citations are missing or not in the correct format.	Sources are not credible, and the citations are missing or are not in correct Turabian style.

Appendix B
Screen Shots of Exhibit ePortfolios







Appendix C
Excerpts from Student Reflections

A. "All in all, I enjoyed my first experience with Pathbright. Right now, I think some of the features are tedious to navigate, but I can see that changes are already being made to the programming, and even then, it's not that hard once you get the hang of it. I really like the way documents, images, and websites can be added to one portfolio. It has a nice aesthetic and is seamless and cohesive; excellent for presentations. I would love to use it for future classes and as a way to showcase my work and experience to future employers."

B. "Overall, I was pleased with my Pathbrite experience. I was hesitant at first due to the technical problems that we experienced, but those feelings quickly dissipated. The online exhibit turned out to be a positive experience and I recommend the continuation of this project."

C. "Working with Pathbrite this semester has been extremely rewarding! Most of the time, I shy away from technological projects because I find them to lack engagement, other than simply putting information onto a PowerPoint slide. This assignment in Pathbrite was completely different. I found it interesting and stimulating to pull together a collection of artifacts into a coherent story to relate what I learned from my research on Kristallnacht. I would be stoked to use this program in my other classes!"

D. "I felt that using Pathbrite was a very valuable tool in my education. I was very uneasy and not looking forward to it when finding out it was required. As I was creating my project I felt this was a great way for students to be able to show off a more creative side and get outside the normal realm of studying with books. I felt this was a very useful tool for this class and am glad I was able to use it."

E. "My experience in working with the Pathbrite system has, to say the least, been a rocky one. While the final presentations have a professional look and feel to them, the process of getting to the final product leaves much to be desired. Technical issues, such as accessibility and easy access for operators, are some of the challenges to be overcome with using this software. Once these bugs have been resolved, there is no doubt that Pathbrite will become a top-notch educational tool."

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Development and Sustainability of ePortfolios in Counselor Education: An Applied Retrospective

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University of Nebraska at Omaha

This article chronicles the evolution of an ePortfolio as a practicum/internship capstone project used to assess skill development in graduate level counselor education at the University of Nebraska at Omaha. The authors describe the successes and challenges encountered from the implementation of an internally designed and maintained ePortfolio in 2000, with revisions in 2003 and 2010, to the transition to a commercially purchased portfolio product in 2014. Experience demonstrates that an effective ePortfolio implementation requires continuous refinement. Ongoing department reflection is necessary to assure the effective implementation of the ePortfolio for multiple program requirements, while meeting the changing needs of students, faculty, and external accreditors. The process of alignment with changing standards, enhanced reflection and feedback elements, and technical design and support are detailed. This applied retrospective describes the application of the literature over time within the platform designs and evolving teaching practices throughout a decade of ePortfolio implementation.

During the 1980s and 1990s, the University of Nebraska at Omaha (UNO) School Counseling Program generally followed a comprehensive competency guidance and counseling model that is associated most often with the University of Missouri (Lapan, Gysbers, & Sun, 1997). The program utilized a written comprehensive exam exit for demonstration of program mastery. The twenty-first century ushered in an ever growing influence of technology on higher education and the adoption of the first American School Counselor Association's Standards for Students (Campbell & Dahir, 1997). The literature introduced university personnel to the digital portfolio (i.e., ePortfolio) as an innovative and paperless method for students to demonstrate learning and skill mastery. For example, Bayles-Martin (1999) described the portfolio as a format for active learning activities, aligned with the push towards constructivist learning. Barnes, Clark, and Thull (2003) detailed the adoption of a digital portfolio as a program exit requirement within the University of Nebraska at Omaha Counselor Education Program School Counseling Program. The literature at that time suggested that the potential existed for the ePortfolio to address multiple program needs. For example, Hewett (2004) described three basic types of portfolio: documentation, process, and showcase. The initial UNO Counseling Department digital portfolio best fits the category of documentation portfolio, with an emphasis on demonstration of growth from "knowledge about" to application of specified standards.

More than a decade of using an internally designed and managed ePortfolio as an evaluation measure in the UNO Counselor Education program provided experiences ranging from unexpected successes to unforeseen challenges. The project evolved from an in-house ePortfolio completed during a practicum field experience by students in the secondary (grades 7-12) counseling track to a K-12 School Counseling Program internship capstone project. More than 170 portfolios have been created, reflected upon, and assessed from 2000 to 2014. Successful completion of the capstone ePortfolio served as an appropriate component of the comprehensive exam process for program completion to formalize and standardize program exit requirements (Pitts & Ruggirello, 2012).

Faculty identified immediate program benefits for assessing student learning. The innovative collection and selection of artifacts in the ePortfolio presentation format grew from a novel idea to a key component of the UNO Counselor Education program. Use over time provided evidence of exceptional adaptability, while exposing very real challenges related to the sustainability of technology to support the ePortfolio. Hall, Byszewski, Sutherland, and Stodel (2012) noted that sustainability issues may include adapting to student and faculty feedback, rethinking technology components, and adjusting to new needs for professional development. These challenges are described for each of the ePortfolio versions. This applied retrospective further identifies important ways in which the ePortfolio format has allowed educators to adapt to changing standards and technical support, while answering the increased demands for accountability measures that include student-learning outcomes (Table 1).

This applied retrospective details the design and implementation evolution through each ePortfolio version. Additionally, the relevant literature that informed each revision is compared and contrasted as a means to reflect upon the constants and changes in the utilization of ePortfolios in education over the decade. Critical sustainability factors are analyzed through the lenses of the literature review and the UNO Counseling

Table 1
Summary of UNO Counseling Department ePortfolio Evolution

ePortfolio version	Distinction from previous format	Technical support	Key considerations
1.0	Provided a digital platform for documentation of practicum/internship experiences. Provided a link between counselor candidate experiences and ASCA National Standards for Students (Campbell & Dahir, 1997)	Internal programmers supported the creation of the ePortfolio. Responsive support and robust ability to customize were provided by internal technical support.	Initial version lacked fields for student reflection. Feedback to the students was text-based and often independent of the portfolio.
2.0	Added a field for candidates to enter reflections related to experiences. Created content links and graphic interfaces to align with the ASCA (2012) National Model.	Internal programmer supported the portfolio. Programming was FileMaker Pro based.	Opportunities for timely feedback to support authentic reflection were very limited. Growing enrollments negatively influenced the degree of faculty response to portfolio artifacts and reflection.
3.0	Added an interactive feedback feature that allowed faculty to respond to candidate work and reflections throughout portfolio artifact creation.	Internal programmer supported the portfolio. MySQL programming platform allowed for expanded features.	Increased functionality increased summative and formative evaluation of portfolio artifacts. New platform resulted in the loss of some archives. Significant ASCA (2012) Model changes created a need for portfolio 3.0 adaptation.
4.0	Rubric scoring internal to the portfolio and unique to each artifact. Ability to collect and report quantifiable data is enhanced. Professional portfolio format is an option.	Personnel changes made it difficult to support MySQL based ePortfolio. Transitioned to a commercial portfolio product selected by the College of Education.	Student fees required to purchase portfolio product. Diminished dedicated technical support existed. Relied on the continuation of college contract with vendor. Increased functionality required faculty commitment to instruct students in the use of a multiple audience portfolio.

Department's experiences in developing and sustaining an ePortfolio in higher education. This article demonstrates that an effective ePortfolio implementation must be continuously refined and adapted to reflect student and faculty learning about ePortfolio utilization and to meet the changing external factors, such as national counseling program models, student standards, and external accreditation requirements.

ePortfolio 1.0—Initial Digital Portfolio

In 2000, faculty, staff, and students associated with the Counselor Education program at UNO began the process of developing web-based professional portfolios for secondary school (grades 7-12) counseling students (Barnes et al., 2003). Journal articles from the era supported the positive effects of portfolio assessments to showcase students' accomplishments and mastery of standards (e.g., Baltimore, Hickson, George, & Crutchfield, 1996; Boes, VanZile-Tamsen, & Jackson, 2001; Carney, Cobia, & Shannon, 1996; Rhyne-Winkler & Wooten, 1996). Authors described the portfolio as an active, instructional activity incorporating collecting, selecting, and reflecting upon a body of work (Barrett, 2001; Bayles-Martin, 1999).

The initial digital portfolio (ePortfolio 1.0) had three primary purposes. First, students created a portfolio as a means of demonstrating competence and experience in an array of related professional activities. Second, students linked these experiences to the American School Counselor Association's Standards for Students (Campbell & Dahir, 1997), demonstrating a wide breadth of appropriate practicum experience for a professional school counselor (Figure 1). Finally, students utilized the ePortfolio to reflect upon developmental growth and demonstrate skill application. The ePortfolio provided a new platform for students' demonstration of growth over time and placed new teaching expectations on course instructors, as well.

The ePortfolio 1.0 functioned as a summative tool to assure that counseling degree students included artifacts for all school counseling program areas, as noted in Figure 1. Additionally, it served as a formative tool where students thoughtfully selected and shaped internship experiences to demonstrate skills application in a school counseling setting (Rita, 2001). Faculty utilized the ePortfolio to measure the counseling students' developmental growth and skill application as part of the program's comprehensive exit requirements. However, within the first two years, faculty realized that ePortfolio 1.0 lacked a key element needed to support candidates' continuous improvement. The design needed an adequate field in which students could record reflections concerning activities, competencies, and experiences. As Baltimore et al. (1996) noted, the assessment of reflections served to inform the student's developmental growth from knowledge awareness to skill implementation.

ePortfolio 2.0—Reflection Field and New ASCA Model Adaptation

In spring 2003, with the aid of an in-house programmer, a reflection field was added that allowed future students a platform (i.e., text field) to record reflections for each artifact. Research noted evidence of a relationship between advanced knowledge application and reflection (e.g., Leung & Kember, 2003). University supervisors emphasized that thoughtful examination of what the counseling students learned from the experience was more valued than the success or failure of the event itself. The students' reflection statements validated that "developing the electronic portfolio not only demonstrates past growth and learning but also generates learning in and of itself" (MacDonald, Liu, Lowell, Tsai, & Lohr, 2004, p. 54).

Additionally, 2003 brought the introduction of the American School Counselor Association's National Model (Bowers & Hatch, 2002). This broad and comprehensive structure for counselors and counseling programs provided a further opportunity to define required ePortfolio evidence. The ePortfolio incorporated several elements described by MacDonald et al. (2004), which included a selective group of artifacts demonstrating student competence and growth, a display of files and reflection, and the provision of an easily accessible exhibit of the student's professional growth and competence.

Although a much improved version, ePortfolio 2.0 lacked a digital method for instructor feedback during artifact development. Wetzel and Strudler (2006) reported that detailed and continuous feedback contributed to greater learning from and value in completion of an ePortfolio capstone project. A tedious process provided feedback on either excellent or insufficient entries by copying work from the ePortfolio and pasting that selection into a word document. The instructor then input comments as shown in Figure 2. A scoring rubric used for final ePortfolio approval provided students with general expectations, yet an effective and efficient way to guide the artifact development process regarding the quality of the work was unavailable electronically. Feedback typically acknowledged efforts at predetermined checkpoints and, in some cases, explained a lower score in a particular area of the rubric. Interactive feedback between faculty and a student occurred in informal conversations during class or in a more formal advisement session.

Increasing numbers of students' portfolios, multiplied by the hours needed to complete the cut-and-paste feedback process, made providing adequate feedback to students on ePortfolio artifacts unmanageable. The counseling program's ePortfolio required a great deal of student time to complete and instructor time to review. Both faculty and students informally described the connections among the amount of time needed to complete the portfolio process, the impact of detailed faculty feedback on the learning growth, and the sense of satisfaction derived by both faculty and students throughout the process. Instructors agreed on the perceived value of the capstone requirement, yet recognized that the ePortfolio platform needed technical updates. Despite refinements in the framework, there remained a need for ongoing technical support from programmers.

ePortfolio 3.0—Interactive Instructor Feedback

The College of Education technology department hired a programmer to take on college projects in technology in 2010. The programmer possessed mastery of specific programming languages (i.e., MySQL) that previous support staff did not possess. In collaboration with the school counseling faculty responsible for supervising the ePortfolio project, the

Figure1

Student Competence Documented by Alignment with Standards

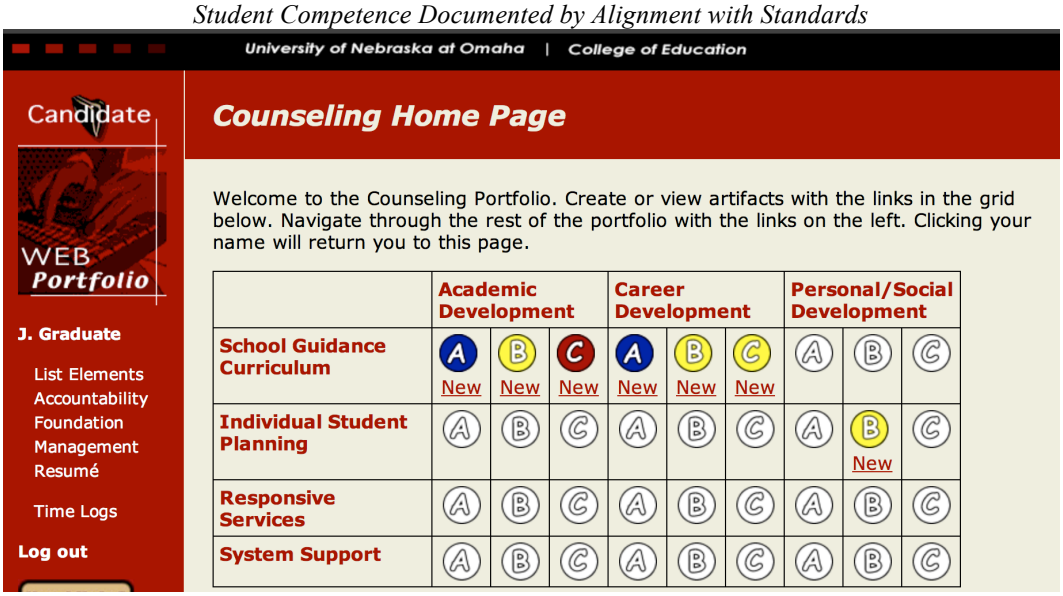

Figure 2

Example of the Cut-and-Paste Paper Feedback Process for ePortfolio 2.0

Example of Positive Feedback for Artifact Approval

Component: Response Services
Student Standard: Academic Standard A
Full Standard: Students will acquire the attitudes, knowledge and skills that contribute to effective learning in school and across the life span.

Implemented and Facilitated an Early Bird Group for 4th-6th Grade Students

With high expectations from their peers for the 6-week period, they rose to the challenge. After our group ended however, several of the students regressed while the remaining students improved their average days of attendance. I continued to motivate the students by greeting them in the mornings until I was given a breakfast "fair share" duty in the cafeteria. Next year, I am going to request an alternative duty that would allow me to be available to greet students in the mornings.

Reviewer Comments: *The group is an excellent example of using data to select group members. Glad to see that this was effective for even a portion of the students. It is also a good example of using the "fair share" times as opportunities to continue counseling.*

Example of Feedback for Artifact Revision

Component: Curriculum
Student Standard: Academic Standard C
Full Standard: Students will understand the relationship of academics to the world of work, and to life at home and in the community.

Partnered with outside agencies to be a facilitator for workshops for students in 10th through 12th grade

Provide opportunities for students to attend workshops geared to youth development and participating in those workshops.

Reviewer Comments: *As written, this artifact does not satisfy the requirement of demonstrating what you delivered or co-facilitated to meet this academic standard. Please either edit current artifact descriptor to explain its selection or choose another experience. Also please edit spelling errors.*

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programmer responded to a requested list of features for the ePortfolio. A new color-coded system noted the degree of completion, review, revision, and final approval for each of the thirty-six entries. The addition of a comment box for each artifact element provided continuous electronic feedback interaction between student and instructor. The impact of this interactive ePortfolio 3.0 was manifested in the next group of students. Everything from grammar errors and element design flaws to inaccessible supporting web files were noted by the instructor through the continuous feedback loop and subsequently revised by students.

Students' comments to instructors suggested that the frequent and substantive feedback on artifact content resulted in a more informed and intentional artifact development, which maximized learning. The quality of descriptive content improved as comments encouraged, questioned, sought clarification, and supported a process of artifact completion demonstrating student growth. As Strudler and Wetzel (2011) noted, "when implemented well, many students and faculty believe that the benefits derived do justify the costs" (p. 167).

ePortfolio 3.0 contained a reflection section with a continuous feedback process between the faculty and students. An analysis of the previous ePortfolio 2.0 reflection section revealed that typically the entry was a summary of the activity description, as faculty had not incorporated any specific reflection model to guide student responses. Those reflections lacked "a way for them to both learn and provide evidence of their capacity for critical thinking, analytic reasoning, and integrative learning" (Rhodes, 2011, p. 9). The discovery of the Gibbs (1988) model of reflection assisted faculty in providing a more structured approach with a series of questions to guide reflection based upon Gibbs's cyclical sequence of describing, feeling, evaluating, analyzing, concluding, and action planning.

Students utilized the following questions to guide their reflective practice for each artifact: What would I do the same? What would I do more of? What would I do less of? What am I proud of? This process provided examples of students' professional growth for potential implementation of and improvements in school district counseling programs. Students developed reflections beyond general comments, such as "kindergartners liked the lesson" or "I was surprised by how much time it took to break into small groups," to create an in-depth examination of the artifact experience in both current and future implementations. The reflections demonstrated growth from knowledge about to actual implementation of a school counseling program.

Reflections grew in length and, more importantly, in thoughtful depth, supporting Scott's (2010) finding that "reflective practice contributes to learning" (p. 433). Faculty supervisors noted that the reflection section became a key element in terms of assessing progress. Students moved from merely describing knowledge about school counseling through random activities to the incorporation of the reflection model elements of evaluating, analyzing, and planning for artifact application in the implementation of a school counseling program, as shown in Figure 3.

Scott (2010) suggested further that the generalization and application of reflection developed self-regulation that assisted the students in determining useful and effective practices in a profession where expectations for behavior change continuously. The *ASCA National Model: A Framework for School Counseling Programs* (American School Counselor Association, 2012) emphasized data driven programs. Beginning in 2013, students described the formal and informal data utilized prior to responding to the reflection guiding questions. Initial review suggested enhancement both in reflection and intentional application of data throughout artifacts. MacDonald et al. (2004) recognized early on in the use of portfolios that one objective was to look back and reflect upon what had been learned and achieved. Additionally, the reflective activity provided the means to identify gaps and consider future development and opportunities for growth.

Faculty and students utilized ePortfolio 3.0 as a capstone school counseling program project with few adjustments until 2014. The UNO College of Education purchased a commercial product portfolio, encouraging departments to incorporate the ePortfolio into coursework and/or capstone projects. In December 2013, counseling faculty learned that ePortfolio 3.0 would no longer be supported with server or technical assistance. At the same time, faculty recognized the need for an ePortfolio platform revision to incorporate the language of the ASCA (2012) National Model. Additionally, an upcoming CACREP (Council for Accreditation of Counseling and Related Educational Programs) reaccreditation process provided an opportunity to review current literature regarding the use of an ePortfolio for both program and accreditation purposes. Yancey (2009) noted that ePortfolio technology considerations included, in addition to cost and ease of use, effective program support. Being unattached to the platform created an opportunity to see how a commercial product could support artifact development requirements and sustain the purpose and value of the ePortfolio experience.

ePortfolio 4.0—Transition to a Commercial Product ePortfolio

The Counseling Department began work with its first commercial ePortfolio product, ePortfolio 4.0, in the spring of 2014. A professor from the teacher

Figure 3
Example of the Reflection Section from ePortfolio 3.0

Element Status: Approved with comments.

Delivery Component: School Guidance Curriculum

Standard: Academic Development C

Students will understand the relationship of academics to the world of work, and to life at home and in the community.

Title: Facilitated a classroom lesson on the responsibilities of student workers to first graders to review the importance of following rules, hard work, and helping others.

Reflection

Being able to sit and truly listen can be a difficult task for any age, let alone first grade. However, this is an important skill to have and practice at a young age. The students enjoyed the story of Howard B. Wigglebottom. They were able to pay attention to the story and practice the skills afterwards of what it takes to be good listeners. Next time, I will refine the worksheet a bit for the students to have a better understanding of what to do. The students seemed unsure of what I was wanting on the worksheet. I found myself going around to each table and almost telling them what to add. To revise the worksheet, I plan on adding word bubbles around each picture I want them to draw. For example, "What are your hands doing?", "What are your eyes doing?" and "What is your mouth doing?" I would also spend more time explaining to students how to fill this worksheet out before letting them start it. I would also send home a letter to parents explaining the key concepts of sitting and listening in school and at home.

eduation department, working closely with the counseling faculty and a commercial vendor representative, developed a template for artifact organization and development utilizing the ASCA (2012) National Model language. The ePortfolio retained the goal of students' demonstration of learning and growth from knowledge awareness to skilled practice. Additionally, the commercial product ePortfolio platform provided an opportunity to utilize these artifacts to demonstrate student learning outcomes for the reaccreditation requirements of the CACREP student standards (CACREP, 2009).

Even though the University system selected and encouraged departments to use the commercial product, the authors conducted a literature review regarding higher education utilization, ongoing value, and enhanced features of a commercial ePortfolio product to inform the implementation process. The literature review focused first on the use and ongoing value of an ePortfolio in shaping student learning. Clark and Eynon (2009) reported that higher education's use of the ePortfolio tripled during that decade, with 50% of institutions using ePortfolios in some fashion. Kahn (2014) stated that the use of ePortfolios had increased sharply since 2010, with a growing number of commercial portfolio product vendors. Kahn referenced the *International Journal of ePortfolio* as an online outlet for researchers and practitioners to share work. With over 40% of higher education institutions reporting utilization of ePortfolios, the Association of American Colleges and Universities recognized ePortfolios as an important strategy for the integration of student learning (Rhodes, Chen, Watson, & Garrison, 2014). Brown, Chen, and Gordon (2012), in results of the second annual Association for Authentic, Experiential, & Evidence Based Learning (AAEEBL), noted, among other findings, an increase in ePortfolio services across 2- and 4-year, public and private universities.

In a Connect to Learning project, Eynon, Gambino, and Török (2014) found that a majority of students responded positively to survey questions focused on whether or not building an ePortfolio helped them succeed as students and be more aware of their growth as learners. Discussions among UNO faculty and students and a department CACREP reaccreditation self-study survey completed by graduating students in 2014 provided direction for the ePortfolio 4.0 platform design elements. Students' anonymity provided the freedom to complete each statement frankly. Analysis of these sentence stubs formed the themed responses

from 20 UNO graduate students found in Table 2 and served to inform the purposeful implementation of ePortfolio 4.0.

The themed responses and literature review resulted in faculty viewing the transition to a commercial product ePortfolio as an opportunity to enhance the student learning experience. Faculty wanted to address students' displeasure with how time-consuming and frustrating the overall portfolio experience had been for some. Students supported and valued the interactive feedback with terms such as helpful, valuable, and constructive. Similar comments, describing the value of reflection as a means of both active self-assessment and reflection to inform the practice of school counseling, aligned with several articles. For example, Rickards and Guilbault (2009) suggested that the feedback and reflection elements involved analysis, interpretation, and construction for the future. The analysis of the survey themes in Table 2 and the literature review enhanced the faculty focus to include both the ePortfolio 4.0 platform implementation and how faculty could scaffold more intentionally the development of reflective ePortfolio artifacts, as described by Roberts and Maor (2012).

The responses related to interactive feedback in Table 2 focused on the value of specificity, fairness, and positive emphasis to inform artifact revisions. Faculty remained committed to a timely, ongoing, and substantive feedback process, which Gaitán (2012) described as the most efficient form of feedback. In addition to a process for instructor feedback across elements of an artifact, the commercial product included a feature for students to submit an artifact to a peer for feedback and 360 review. This feature provided an electronic opportunity to strengthen students' skills in looking for critical elements in the artifact, practicing constructive feedback, and seeing the work of other students to enhance the self-assessment of their own work.

A review of the literature included both positive outcomes and cautions regarding the peer review practice. An element of Schön's (1987) theory described the importance of collaborating with others when reflecting on action. Kao (2013) cautioned that threats of unfairness, distorted scoring, and quality of comments required faculty intentionality in the peer review process design. Kao (2013) also noted, however, that a number of studies reported positive responses for and results from peer assessments, particularly when peer assessment tools were developed and reviewed with students. The Kao (2013) article included six steps for faculty consideration to improve the quality of peer review. Based on this literature, the UNO Counseling Department agreed to study further the requirements of a peer feedback interaction to purposefully design the peer feedback protocol.

The ePortfolio 4.0 platform included the capability of incorporating the UNO ePortfolio scoring rubric, provided in Figure 4, into each artifact developed by students. This electronic feature afforded ongoing, rubric-based feedback to inform and improve artifact development. Research findings about the primary value of the rubric were that communicating faculty expectations and engaging with students in the assessment of their professional growth supported a continuous communication process (Dalal, Hakel, Sliter, & Kirkendall, 2012). The access to quantitative data from the scoring rubric provided faculty with a new means of assessing students' learning.

Specifically, the data evaluation from the electronic scoring rubric provided one method of addressing the challenge that ePortfolio effectiveness relied too much on theory and assumptions rather than empirical evidence and data-supported research (Bryant & Chittum, 2013). Rhodes (2011) suggested that rubrics exhibit content validity when "broadly articulated and accepted by faculty" (p. 10) in multiple areas of learning, creating "standards without standardization" (p. 10). The ePortfolio 4.0 platform enhanced content validity by using the scoring rubric throughout the artifact development process. The use of the ASCA (2012) National Model standards for every artifact design and revision resulted in consistent and rigorous evaluations, demonstrating inter-rater reliability. These data points also provided a response to the CACREP recommendation that an increased use of formal assessment tools be a part of the reaccreditation process.

A themed response from the UNO student survey suggested that the reflection element provided an opportunity to (see Table 2):

> reflect on what I was proud of and what I plan to change or continue in the future, a reason to consider the successes or failures of each item, and capture useful tips for next time demonstrated [*sic*.] the ongoing benefits of the reflection section.

The recent literature has included many articles on reflection and the skills required for reflective writing. Research supported the value of student reflection within artifacts, particularly when enhanced with ongoing dialogue between student and ePortfolio reviewer. Jenson (2011) reviewed literature and developed a process to move reflective writing from surface to deeper learning, which included reflection as an element for every assignment within a course. Hallam and Creagh (2010) noted that little in the literature on reflection came directly from students. The authors proposed that each semester a questionnaire capture students' expectations and that a post-semester questionnaire focus on students' experiences. Hallam

Table 2
Themed Responses from Students Regarding the ePortfolio Experience

Reflection statements	Students' themed responses
The overall portfolio experience . . .	Time consuming, frustrating, overwhelming, grueling, arduous, and intimidating were adjectives found throughout intern responses.
	Locating and doing the lessons to meet the student standards, seeing the completed portfolio and having a place to find lessons, becoming more familiar with the standards, focusing the experience of the counseling program, and helping to reflect on everything accomplished were common responses.
	Would be more beneficial if "I could take it with me and display it for future jobs or be able to share with classmates, and the desire to have been working on it throughout the program are requests being addressed in portfolio 4.0.
The value of the feedback textboxes . . .	Helped narrow down areas for improvement, expectations, changes needed, and where certain items fit were common descriptors under the general theme of "very helpful."
	Valuable, positive, directive, fair, targeted, specific, and constructive were common adjectives in responses.
The reflection section provided . . .	A space to state feelings about the artifact, a chance to think about positives and negatives of lesson, a good way to evaluate a piece of evidence, an opportunity to think about whether the overall objective had been met were common descriptions of what the reflection section provided.
	A chance to reflect on what I was proud of and what I plan to change or continue in the future, a reason to consider the successes or failures of each item, and capture useful tips for next time demonstrated the ongoing benefits of the reflection section.
The most beneficial aspect of the portfolio . . .	Specific guidance and usage of the ASCA model, focused attention paid to all elements of the ASCA model, exposing the skeletal parts of the ASCA model were direct comments regarding the ASCA model framework.
	Identifying how and what to use to meet student standards, dividing up tasks to fit categories, seeing lessons for each domain, and seeing all the ways to use standards in a program describe the practical aspects of the portfolio experience.
	The opportunity to put in writing the many things I have accomplished in my first year on the job with specific feedback was described as beneficial.
The biggest challenge of the portfolio experience . . .	Time, placing things in the correct domain, finding 36 different items, identifying the student standards for system support, and identifying individual student planning artifacts for elementary students were common challenges.

and Creagh (2010) further suggested that comparisons between beginning and mature users could provide access to student' voices regarding their growth in learning over the course of the program. Articles focused on specific rubric development for self-assessment and reflection (Rhodes, 2014; Rickards & Guilbault, 2009). Dalal et al. (2012) found a gap in research on reflection and application and provided a modeĪ, Reflection Depth Ratings: Training Session Information, to teach students how to assess reflection and enhance learning through peer review. Rickards et al. (2008) defined the term deliberative inquiry process as "how students construct their learning from artifacts and how these processes might be understood through existing theoretical frameworks" (pp. 38-39). The article described the qualitative analysis of student work and interviews, arriving at the conclusion that it was possible to examine the depth of integrated activity reflection from theory to practice. Research suggested a potential new emphasis and value of the ePortfolio reflection component beyond the contexts of evidence of course learning and field experience application.

The faculty's reflection on the reflection literature itself provided an additional context in which to understand and evaluate students' ability to be successful practicing school counselors. UNO counseling faculty agreed to incorporate specific reflection assignments throughout coursework, including an emphasis on teaching a reflective writing component. The Counseling Department faculty utilized the more recent reflection literature articles, along with the Gibbs (1988) model of reflection, to propose the 2014-2015 agenda for a professional learning circle, referred to as a community of practice at UNO, to develop faculty's knowledge and skills related to the teaching and reviewing of students' reflections as

Figure 4

Scoring Rubric for the University of Nebraska at Omaha ePortfolio

University of Nebraska at Omaha Advanced Internship Scoring Rubric
Portfolio Demonstration of ASCA Model Delivery System Components

	4	3	2	1
Content Descriptions	Covers topic in-depth with supporting details and examples related to the candidate's professional experiences.	Includes essential information about the candidate's professional experiences.	Includes limited or basic information about the candidate's professional experiences.	Contains no information about the role of the candidate's professional experiences.
Experience Supported by Artifacts	All professional experiences were well supported with relevant statistics, illustrations, and/or examples.	A majority of the professional experiences were well supported with relevant statistics, illustrations, and/or examples.	A few of the professional experiences were well supported with relevant statistics, illustrations, and/or examples.	There were no supporting documents provided to further support descriptions of professional experiences.
Relevance of Supporting Material	All supporting elements had a function and clearly served to illustrate some aspect of the experience.	Most supporting elements had a function and clearly served to illustrate some aspect of the experience.	Few supporting elements had a function and clearly served to illustrate some aspect of the experience.	Supporting documentation was confusing and failed to further illustrate aspects of the experience.
Grammar & Spelling	Writer makes no errors in grammar or spelling that distract the reader from the content.	Writer makes 1-2 errors in grammar or spelling that distract the reader from the content.	Writer makes 3-4 errors in grammar or spelling that distract the reader from the content.	Writer makes more than 4 errors in grammar or spelling that distracts the reader from the content.
Reflective Statements	All reflections reveal meaningful insights that result in changes to future practice.	A majority of reflections reveal insights that are likely to influence practice.	Reflective statements demonstrate little depth and do not influence practice.	Reflections were not provided.
Overall Effectiveness	The portfolio clearly demonstrates the candidate's role in professional school counseling activities.	The portfolio provides examples of the candidate's role in school counseling activities.	The portfolio provides examples of activities that are not necessarily specific to school counseling.	The portfolio fails to provide evidence of competence in school counseling activities.

Overall Score:

Comments:

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evidence of skill development. The faculty expressed specific interest in the concepts of depths of learning model and student voice analysis through the use of pre/post questionnaires.

Chatham-Carpenter, Seawel, and Raschig (2009) stated that higher education institutions successfully use ePortfolios to "enhance student learning, conduct authentic program/institutional assessment, support students as they prepare for future careers, and meet certification standards" (p. 437). Utilizing the commercial portfolio throughout the students' graduate school counseling program coincided with the increasing requirement of the CACREP accrediting organization that programs demonstrate that students really learn what standards propose and faculty expect. With these research findings, the faculty decided to utilize ePortfolio 4.0 both for CACREP reaccreditation and the UNO Counseling Department's capstone project. Students would have ePortfolio course assignments aligned to CACREP standards for student learning outcomes. These assignments could potentially become artifacts for the ASCA National Model-aligned counseling program ePortfolio exit requirement.

A focused literature review provided faculty with valuable research regarding a multiple use ePortfolio. Gallagher and Poklop (2014) discussed the challenges of multiple audience portfolios. The authors cautioned that, while the ePortoflio's capacity to write for multiple audiences could seem like a great opportunity, it could also lead to a confusing and frustrating ePortfolio experience. Gallagher and Poklop (2014) defined four distinct ePortfolio types and challenged instructors to provide instruction that assisted students in writing for multiple audiences. The article further suggested that a dual purpose ePortfolio required intentional communication between faculty and students to avoid audience interference, the result of students unsuccessfully attempting to meet the expectations of more than one audience in a single ePortfolio artifact. Even though the commercial product provided a unique opportunity for a multiple use ePortfolio at the university, based on the literature the faculty decided to develop prompts to assist students in writing for multiple audiences to minimize the confusion and frustration noted by the researchers.

Additionally, the new platform provides students with opportunities to develop a more unique presentation of artifacts for employer interviews and other external uses. Yancey (2009) noted that students were more enthusiastic about the ePortfolio project knowing that they were able to personalize the ePortfolio in presentation style and utilize artifacts and reflection across experiences in the graduate program and the profession. Research as early as that by Hewett (2004) noted that sharing ePortfolio artifacts via the Internet provided employers with a way to get to know the candidate's philosophy, decision making through reflective responses, and quality of finished products. The sharing of artifacts with a potential employer involved an additional voice for students' consideration and faculty support.

The review of current literature demonstrated that the "ePortfolio world is arguably multifaceted" (Hallam & Creagh, 2010, p. 2). The transition to ePortfolio 4.0 initially appeared to be one of moving from a longstanding, in-house platform to a commercial product portfolio, focusing on platform compatibility. Instead, this multifaceted transition included intentional faculty shifts in teaching skills, such as reflective writing, and more rigorous assessment and evaluation of ePortfolio effectiveness. The UNO counseling program ePortfolio 4.0 goals and objectives evolved into a model in which students create projects for specific courses that provide evidence of skill acquisition associated with those courses (e.g., small group lessons for the school group counseling course). Students then select activities from their field experiences as artifacts for the capstone ePortfolio, reflecting upon growth from knowledge and skills about school counseling to the actual program implementation experience. Using the ePortfolio throughout the counseling program establishes a continuous emphasis on skill acquisition and reflection. It also provides students with more flexibility, allowing them to select from a number of artifacts to demonstrate learning, progress, and proficiency in the capstone product.

The value of the ePortfolio capstone project for graduating school counselors at the University of Nebraska at Omaha is captured in the term integrative learning, suggesting that an ePortfolio integrates course learning with field experience in a way that enhances the goals of a higher education counselor education program (Chatham-Carpenter et al., 2009). Additionally, ePortfolio 4.0 addresses the comments and requests of UNO students regarding the desire to have a longer period of time throughout the practicum and internship sequence to develop the artifacts from coursework and field experience to meet the ePortfolio capstone project requirements.

Recommendations and Conclusions—A Decade of Learning

The development and sustainability of an ePortfolio in counselor education remains a complex endeavor. The process of research and reflection, along with the opportunity to consider what the authors learned over time, reveals several key requirements for success, including: faculty flexibility and commitment to the value of the ePortfolio; university support (technical and monetary); onsite technical support in

design and implementation; and ongoing dialogue between students and faculty.

Key considerations and recommendations include the following: First, engage early in constructive conversations to consider fully the time required for development of an ePortfolio. Second, ensure that the design and technical capacity supports the expectations of both students and faculty, including the number and type of digital artifacts, feedback mechanisms, and methods to assess learning outcomes. Third, identify the clear purpose(s) of using an ePortfolio, such as demonstrating program exit requirements (summative) or shaping student learning (formative). When multiple purposes are present, such as accreditation efforts, assure that the demands for each can coexist. Fourth, identify necessary student skills and nurture their development throughout their coursework in preparation for meeting the ePortfolio requirements. For example, teach and model the use of a feedback and reflection cycle. Fifth, solicit feedback from faculty and students throughout the development and implementation stages of an ePortfolio. Feedback directs revision and instills confidence that the value of the experience for students and faculty is maximized. Sixth, recognize that technology, technology support, and related funding sources drive the sustainability of an ePortfolio. The documentation of student learning, in pragmatic terms, may be secondary compared to administrative costs. Seventh, maintain collaboration and communication with key stakeholders, as successful management of an ePortfolio is not an individual venture. Finally, implement a structure to engage periodically with the literature addressing ePortfolio evolution and specific elements such as reflection and feedback.

An unexpected result of the review of the literature for ePortfolio 4.0 implementation was the excitement generated among faculty regarding the intentional teaching opportunities and data analysis available to strengthen the value of the project for student integrated learning. The literature on reflection led to a commitment from faculty to include reflection prompts for all major assignments throughout the school counseling graduate program. The current reflective practice incorporates the *on-action* approach (Schön, 1983), in which ePortfolio entries are recorded after the experience for a program requirement. The *in-action* approach (Schön, 1995), where the reflection is written during the activity to focus on the unexpected, provides a new methodology for reflective writing activities throughout coursework. The review and utilization of additional reflection rubrics, student training for rubric peer review, and periodic assessment of student satisfaction are all program additions directly related to the literature review.

The winter 2014 edition of *Peer Review* focused on ePortfolios past, present, and future. The guest editor, Rhodes (2014), responded to the question, "Why bother with ePortfolios?" by describing the potential benefits and uses for multiple stakeholders. Faculty members incorporate course, program, and institutional learning outcomes through multiple student artifacts. Students demonstrate their very best work over time, resulting in a final product showcasing their accomplishments and growth. Programs and institutions have authentic products of student work related to program and accreditation accountability. Bass (2014) suggested that ePortfolios are "not the hottest thing in higher education" (p. 35) but are instead "agents of integration" (p. 35). Bass concluded that ePortfolios uniquely display the development of the whole student and the distinct culture of a local higher education institution. The UNO Counseling Department is the first of the graduate programs at this institution to develop and implement an ePortfolio for multiple audiences. Cross-departmental collaboration to expand the integration of ePortfolio utilization in multiple graduate programs in the UNO College of Education is a goal.

The UNO Counselor Education Department's decade of commitment to the incorporation of the ePortfolio for program assessment qualifies as more than following a trend and, instead, recognizes the opportunities for program integration through the latest adaptation of the ePortfolio 4.0. Every innovation increases the complexity of quality utilization of an ePortfolio in higher education. Faculty moved from angst regarding the platform change to anticipation of an even more effective ePortfolio experience for students. Students' ePortfolio artifacts and process insights continue to provide the rationale and drive necessary to engage in the complex development and sustainability of ePortfolios in counselor education.

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Why ePortfolios? Student Perceptions of ePortfolio Use in Continuing Education Learning Environments

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Over the past decade, there has been an increased exploration of ePortfolios in higher education across disciplines at both the undergraduate and graduate level. ePortfolios have been significantly under-explored, however, in the context of non-traditional continuing education environments within higher education. This paper explores students' perceptions of ePortfolios in a non-credit continuing education environment in three programs—Fine Arts, Writing and Editing, and Residential Interiors—unpacking some of the opportunities, challenges, and barriers associated with ePortfolio use. It concludes that continuing education students, at least in programs where traditional (hard copy) portfolios are commonplace, are positively inclined towards the introduction and use of ePortfolios, though the study still identifies two major concerns that need to be addressed—the level of computer literacy in the student body due to their variability in age and previous educational backgrounds, and the support for and portability of the ePortfolios for students and instructors.

Why use ePortfolios? What are students' expectations of ePortfolios? What might be barriers to their effective use? Critical questions like these are important to understand when any technology is introduced to the teaching and learning environment, but it is easy to jump instead right to the question of how we implement said technology. How educators come to understand these questions as they relate to ePortfolios might be even more complex in disciplines where traditional portfolios have been used for many years. And within those disciplines, these questions are arguably even trickier when applied to the continuing education environment within higher education.

While some work has been done to measure student perspectives on ePortfolio integration (Ritzhaupt, Singh, Seyferth, & Dedrick, 2008), the identification of baseline evaluation data for ePortfolios is needed, particularly within the continuing education learning environment, to allow researchers to review existing ePortfolio initiatives and assess adequately the outcomes of ePortfolio projects. This paper attempts a more systematic exploration of the possible use of ePortfolios in non-credit continuing education programs. In particular, it explores students' perceptions of ePortfolios in a non-credit continuing education environment in three programs—Fine Arts, Writing and Editing, and Residential Interior Decorating—where traditional portfolios had been required or recommended parts of the programs. In doing so, this paper unpacks some of the opportunities, challenges, and barriers associated with ePortfolio use in this context.

Literature Review

In the last decade, ePortfolios have been receiving increased attention as an effective approach to providing learner-centered assessment for online courses (Mason, Pegler, & Weller, 2004) and as a vehicle for formative and summative student assessment (Chatham-Carpenter, Seawel & Raschig, 2010; Klenowski, Askew & Carnell, 2006; Lam & Lee, 2009). The existing literature indicates that portfolios may have several advantages over other forms of assessment. In particular, portfolios possess integrative learning potential: the ability to connect experiences and knowledge gained in the academic context with a variety of other contexts, including the workplace and community (Acosta & Liu, 2006; Light, Sproule, & Lithgow, 2009; Tosh, Wedmuller, Chen, Light, & Haywood, 2006).

The research on ePortfolios builds on years of research supporting the use of portfolios as both a formative and summative assessment tool in higher education. Shulman (1998) articulated several benefits of portfolios, including the fact that they permit tracking of longer episodes of teaching and learning more effectively than single observations do, as well as encourage important connections between process and product. They can also help institutionalize norms of collaboration, reflection, and discussion and help to shift responsibility for demonstrating learning to the student as a participant rather than observer. Shulman (1998) also articulated several risks that might occur with portfolio use, including: (a) *lamination* (the portfolio can become a mere exhibition, enabling a student to show off without giving a true representation of the work); (b) *heavy lifting* (it can be powerful, but considering the amount of time portfolios can take to assemble, the benefit may not be worth the effort); (c) *trivialization* (it can result in students documenting things that are not worth reflecting upon); (d) *perversion* (if the assessment of a portfolio is not done well, it can result in a perversion of the assessment process, becoming like a checklist task); and (e) *misrepresentation* (it might result in an emphasis on

examples of "best work" that might not to be an accurate picture of the students' overall competence in the field).

Overviews that have been undertaken of ePortfolio initiatives at universities across North America and Australia demonstrate the breadth and scope of the types of approaches and comprehensive application of ePortfolios for teaching, learning, and professional development (Hallam & Creagh, 2010; Hallam et al., 2008; Lorenzo & Ittelson, 2005). There are numerous ways in which the ePortfolio can support teaching and learning processes, including, but not limited to, assessing student performance, facilitating student reflection, and displaying student achievement (O'Keeffe & Donnelly, 2013; Penny Light, Chen, & Ittelson, 2012; Sherman, 2006). There have also been explorations comparing traditional portfolios with ePortfolios (Van Wesel & Prop, 2008).

Well developed ePortfolios have the potential to enable students to share their projects, documents, and reflections from coursework spanning their entire program, with clear program-related criteria, in a collaborative virtual environment (Bryant & Chittum, 2013; Challis, 2005). Successful ePortfolio projects also integrate self-assessment and peer-assessment, are flexible in the types of content they can include, and act as both a means to demonstrate learning over a span of time and a presentation platform for self-promotion and future employment (Wade, Abrami, & Sclater, 2005). In addition, ePortfolio projects can facilitate self-regulation and critical reflection in students (Carmean & Christie, 2006; Jenson, 2011). In particular, leadership oriented programs and programs that involve a cohort model appear to benefit from the integration of an ePortfolio into program design (Barnett, 1995; Barnett, Basom, Yerkes, & Norris, 2000).

ePortfolios can also provide students and faculty with an opportunity to perceive learning and teaching as a process of discovery, one that started long before attending the university and will extend long after university. With an ePortfolio, professors and students can see and can share learning progress over the course of their studies. With some ePortfolio approaches and tools, students can also integrate their reflections with learning that extends beyond their studies, and thus provide not only proof of lifelong learning, but also of their life-wide learning (Chen, 2009). Indeed, it has been argued that it is possible to make learning visible through ePortfolios when educators bring together the "right" pedagogy (one focused on student development, reflection, and a holistic sense of learning) with the right technology (one that allows students to focus on the content rather than the construction of the portfolio; Johnsen, 2012).

The possible applications for ePortfolios extend beyond the educational sector. In the medical field, for example, ePortfolios are being tested at as a means to restructure and reorganize performance assessments and continuing professional development (Dagley & Berrington, 2005; Davis, Myers, & Myers, 2010; Driscoll & Teh, 2001). In the business sector, social ePortfolio software has been suggested as a means to create spaces for intra-organizational collaboration and knowledge transfer (Lesser & Storck, 2001). ePortfolios have also been seen as a contemporary approach to presenting oneself to potential employers (Kersten, 2004; Yu, 2011).

Although there are potential barriers to implementing ePortfolio projects effectively–such as the need for student support–there is also evidence to suggest that students are able to assist in peer ePortfolio development (Shepherd & Bolliger, 2011). Open source tools are also being explored as a means to develop virtual communities that can generate social capital, generally regarded as potentially a central component of developing successful virtual learning communities (Daniel, Schwier, & McCalla, 2003) with ePortfolio implementations. Similarly, Bolliger and Shepherd (2010) found that ePortfolios developed using free and readily accessible online tools, such as various tools in the Google suite, can successfully create a virtual learning community in which peers provide support for each other via student directed review and discussion posts. In addition, assistance can occur through student directed collaboration and communication (Wang, 2009).

While the use of ePortfolios is spreading, research on their utility is just beginning to emerge in the literature (Bryant & Chittum, 2013; Challis, 2005; Hallam & Creagh, 2010), particularly within formal and informal continuing education programs. Few studies on ePortfolio use in continuing education have been conducted thus far. Although some authors have indicated that ePortfolios are appropriate for demonstrating the integrative learning of non-traditional students (Acosta & Liu, 2006), little has been written regarding non-traditional student perceptions of using an ePortfolio. While Mason (2006) found that ePortfolios can be successfully implemented for adult students enrolled in an online continuing education master's degree program, the author acknowledged that this particular subset of adult learners is not representative of all adult learners.

Context

This study was completed at a large, public medical-doctoral research university in Western Canada, with over 37,000 students registered in graduate and undergraduate programs and over 10,000 students in non-credit certificate and general interest programs. It was completed as one part of a multi-faculty study exploring ePortfolio use across the

institution in both credit and non-credit programs. This paper looks specifically at the perceived benefits of ePortfolio use among adult learners in three non-credit programs in which traditional portfolios had been commonly used—Residential Interiors, Fine Arts, and Writing and Editing programs. These programs, over the year preceding the study, had over 650 students totaling over 2,000 individual course registrations.

All three programs included in this study had a significant history of using traditional portfolios as part of their program. For example, the Fine Arts and Residential Interiors certificate programs both had incorporated portfolio reviews as a significant part of their program completion, and the ethos of portfolio pedagogy—the use of portfolios as a major tool to assess students' ongoing development—was used at the individual course level across all three programs. Prior to this project, the programs had no previous experience using ePortfolios as a way for students to store, organize, reflect on, and communicate their work to instructors. Many instructors and students, however, had previously developed web-based portfolios to communicate their own work separate from the requirements of the program.

The introduction of ePortfolios across the programs, as an optional tool to submit digital (image-, video-, audio-, or document-based) content for review, was intended to inform the potential adoption of an ePortfolio tool embedded in the institutional learning management system (LMS). The original purpose of the pilot project was to allow students to choose to either develop an ePortfolio or continue using a traditional portfolio. There was, however, significant resistance among instructors in these programs to participating in the pilot. Instructors expressed concerns about the students' highly variable ages, previous education backgrounds, and unknown levels of computer literacy, so this study was developed and completed to explore the interest, perceived usefulness, and readiness of the continuing education students to utilize an ePortfolio tool, prior to pursuing a formal roll out of ePortfolios as a tool within the three programs.

Method

Instrument

The survey was intended to explore the perceptions of traditional portfolio use among non-credit continuing education students, to assess the students' perceptions of the usefulness of ePortfolios in their current program, and to assess the comfort level of students with various computer technologies. The first section of the survey was designed to gather detailed demographics of the continuing education students in the programs, including data not normally gathered in the continuing education registration process (e.g., previous educational background and age).

The second section of the instrument explored the students' perceptions of portfolio use in general and the perceived appropriateness and usefulness of ePortfolios in particular. This section was developed following an in-depth analysis of the literature in the field of ePortfiolio use in higher education (Carmean & Christie, 2006; Dagley & Berrington, 2005; Klenowski et al., 2006; Lorenzo & Ittelson, 2005; Ritzhaupt et al., 2008; Van Wesel & Prop, 2008). Finally, the section of the instrument exploring students' readiness with various forms of technology built on a previous study by the authors exploring the use of educational technology amongst continuing education students in a different field of study (Wuetherick, Dickinson, & Daniels, 2015; Mason, 2006). A copy of the survey is available in the Appendix.

Distribution

The survey was distributed online and took between 5 and 10 minutes to complete. Students were informed that their email addresses had been obtained from the Faculty of Extension Registration office with permission from the institutional Privacy Office and the Research Ethics Board, and that by completing the survey, they were consenting to be research participants.

A questionnaire administered online was a desirable way to collect information as computer access is increasingly widespread, email makes it very easy to contact participants and excludes paper, postage, and data entry costs (including open-ended questions), there are reduced data entry errors, follow-up reminders are easy and inexpensive, and it is less likely that participants will answer questions inappropriately. Some disadvantages of this format include that some respondents (especially with our target demographic) may be uncomfortable with the online format, the immediacy of e-mail can make it more likely that respondents will indefinitely defer completing the survey, and it may be possible that the person completing the survey is not the intended respondent. For the quantitative data, the researchers used SPSS for all data analysis, while for the open-ended questions NVivo was used to code the data for analysis of major themes.

Analysis

Two statistical tests were used for the majority of the current project: the Kruskal Wallis test and The Mann-Whitney U test. The Kruskal Wallis test, a nonparametric equivalent to the one-way ANOVA, was used to identify significant differences across age groups and program areas. This test was used for two main reasons: first, it is appropriate for ordinal level

variables such as the Likert-style items on the student questionnaire; second, it does not assume normality in the response distribution (an assumption the responses violate). The Mann-Whitney U test, a nonparametric equivalent to the independent *t* test, was used to test for differences by gender. This test is appropriate when only two categories exist in the independent variable (i.e., male and female).

Participants and Demographics

The study surveyed 668 students from three program areas: Residential Interiors, Fine Arts, and Writing and Editing. In total, 218 responses were collected, resulting in a response rate of 33%. By program type, 44.1% (n = 81) of respondents were enrolled in Fine Arts, 33.5% (n = 66) in Writing and Editing, and 25.4% (n = 50) in Residential Interiors. As shown in Table 1, the majority of students have already completed a post-secondary program, with 34.7% and 23.6% having completed an undergraduate degree and graduate degree, respectively. Fewer students reported their highest credential to be a diploma, certificate, or high school degree.

Gender and program area. In this sample, 87.2% of students are female and 12.8% are male. Pearson chi-squared tests revealed that this ratio is not even across the three program areas, however, with the highest percentage of female students in Residential Interiors, followed by Writing and Editing and then Fine Arts, $\chi^2 = 6.455$, $df = 2$, $p = .040$ (see Table 2). These gender distributions were almost identical to the overall gender distribution of all students in the programs, so it was determined that this sample was representative from the perspective of gender.

Age and program area. Although students range in age from under 20 to 70 and older, the largest numbers of students are aged 50-59 (29.4%), followed by 40-49 years of age (24.8%; see Table 3). There are also significant ($p < .001$) differences in age by program type. Post hoc tests reveal that students of the Residential Interiors program have a significantly lower mean age than students in either the Fine Arts ($p < .001$) or Writing and Editing ($p < .001$) programs. Again, based on a brief analysis of the overall student body's registration statistics, these age distributions are very similar to the distributions for the overall student body within these three programs.

Results

Student Perceptions of Portfolio Use

Most students reported that they had not created a portfolio in their previous educational experiences, with only 38.4% reporting previous use. In two of the programs surveyed (Fine Arts and Residential Interiors), a (hard copy) portfolio was a required component for the completion of the certificate, and a portfolio was encouraged as an option in the other program area (Writing and Editing). At their current place in their programs, the respondents' exposure to a portfolio varied considerably by program area. While 60.5% of students in Fine Arts and 40.0% of students in Residential Interiors had developed a portfolio as part of their current program, only 3% of students in the Writing and Editing program had done the same. This being said, students in both the Residential Interiors and Fine Arts perceived their current portfolio to be a useful part of their program. These students also found the portfolio review process to be beneficial and believed that the portfolio will continue to be important after completing their program (see Table 4).

When asked to specify, in their own words, the best part about having to complete a portfolio, four main themes emerged in the student responses. First, many students indicated that the ability to share a representative sample of their work was advantageous (n = 22 coding references). Second, many students found the feedback they received after submitting their portfolio to be useful (n = 15 coding references). Third, the process of simply completing a portfolio was, in itself, a useful exercise. It allowed students to organize their work and prepare it for presentation to others (n = 14 coding references). Fourth, students indicated that being able to demonstrate evidence of progress, growth, and ability through their portfolio was useful (n = 10 coding references). Less common themes in the responses included the ability to facilitate self-assessment and reflection, to develop relevant professional skills, and to develop the personal discipline to complete and document projects fully.

Student Perceptions of an ePortfolio

Overall, student perceptions of the potential use of an ePortfolio were positive. Students currently utilizing a portfolio believed that aspects of the portfolio component of their program might have been possible in an electronic form, with 58.8% of students from Residential Interiors and 71.1% of students in Fine Arts in agreement. When asked to explain, in their own words, why aspects of the portfolio might have been possible in electronic form, two main themes emerged in the student responses. Most frequently, students cited the ease with which one can share works in electronic form (n = 24 coding references).

Regardless of whether submitting works to their instructor for grading, sharing works with clients or galleries, or granting general access to the public, the convenience afforded by the ePortfolio was the main reason why students reported they might be useful.

Table 1
Responses to: "What is the Highest Credential that You've Completed?"

	Frequency (*n*)	Percent (%)
High School	22	10.2
Certificate	26	12.0
Diploma	42	19.4
Undergraduate degree	75	34.7
Graduate degree	51	23.6

Table 2
Program Area by Gender

Program	Male	Female
Residential Interiors	6.3%	93.8%
Fine Arts	21.3%	78.8%
Writing and Editing	10.8%	89.2%

Table 3
Responses to: "How Old are You?"

	Frequency (*n*)	Percent (%)
< 20	2	0.9
20-29	33	15.4
30-39	32	15.0
40-49	53	24.8
50-59	63	29.4
> 60	31	14.4

Table 4
Student Perceptions of the ePortfolio

	How useful is the portfolio component of this program?		How beneficial is/was the portfolio review process?		How important will a Portfolio be to you once you complete the program?	
Program	*M*	*SD*	*M*	*SD*	*M*	*SD*
Residential Interiors	4.35	0.988	3.76	1.091	4.55	0.826
Fine Arts	4.16	0.943	3.82	0.936	4.04	1.051

Note. For each item where a mean is reported, a higher mean corresponds to an increasingly positive response (e.g., more useful, greater benefit, greater importance). The number of students in the Writing and Editing program who completed a portfolio ($n = 2$) as part of their program was too low for meaningful comparison.

Students also indicated that the ePortfolio would allow them to include additional works in their portfolio, including digital work and those inappropriate for a physical portfolio ($n = 6$ coding references). This is congruent with the finding that students tended marginally to agree that compared to a traditional portfolio, an ePortfolio would be more useful ($M = 3.79$, $SD = 0.988$; see Table 5).

As shown in Table 5, students across all program areas reported that that it would be useful to be able to record and/or present digital media and files ($M = 3.95$, $SD = 1.173$). When asked to rate the importance of various features of an ePortfolio, students rated transportability (i.e., the ability to keep the ePortfolio even when they are done with their program) as most important ($M = 4.51$, $SD = 0.892$). This was of particular interest, as the ability to make the LMS-embedded portfolio available after the program was limited at the time of the pilot. Ease of storage ($M = 4.39$, $SD = 0.920$) and being able to give people remote access ($M = 4.35$, $SD = 1.021$) were also important to students. While the ability to include

Table 5
Student Perceptions of the ePortfolio

	Compared to a traditional portfolio, how useful would an ePortfolio be to you?		How useful would it be to you to be able to record and present digital media and/or files?		If you were to create an ePortfolio how important would the following be to you?							
					Transportability		The ease of storage		Being able to give people remote access?		The ability to include digital content	
Program	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Residential Interiors	3.96	0.947	4.24	0.870	4.67	0.658	4.50	.839	4.39	0.862	4.41	0.814
Fine Arts	3.74	1.111	3.98	1.214	4.47	0.937	4.37	.887	4.47	0.950	4.06	1.238
Writing & Editing	3.73	0.851	3.70	1.277	4.42	0.978	4.33	1.024	4.17	1.193	4.14	1.175
Total	3.79	0.988	3.95	1.173	4.51	0.892	4.49	0.920	4.35	1.021	4.17	1.128

digital content (M = 4.17, SD = 1.128) was the lowest rated item in terms of importance, it nonetheless remains an important quality of the ePortfolio for students.

Demonstrating Learning and the Importance of Reflection

There were significant differences by program type (p = .003; see Table 6) in student perceptions around the importance of being able to demonstrate learning to others. More specifically, *post hoc* tests reveal that significant differences existed between students in Residential Interiors and Fine Arts (p = .005) and between Residential Interiors and Writing and Editing (p =.008). Residential Interiors students were generally more positive in how they rated the importance of demonstrating their learning to others (M = 4.27), which was significantly higher than students in the other program areas. In both the Fine Arts and Writing and Editing programs, students were mixed (M = 3.57 and 3.48, respectively). Across all programs, when separated by gender, female students (M = 109.98) rated the importance of demonstrating their learning to others higher than male students (M = 75.35, p = .004). No other significant gender differences were found.

Significant differences (p = .003; see Table 6) also existed in student perceptions about the importance of being able to reflect on what is learned during their program. Post hoc tests revealed that significant differences existed between Residential Interiors and Writing and Editing students (p = .005). Students in Residential Interiors perceived reflection to be more important than those students in Writing and Editing. In all three programs, however, students were more positive that reflection is an important aspect of the program's learning experience, though only marginally so for students in Writing and Editing (M = 3.80 compared to 4.45 for Residential Interiors and 4.11 for Fine Arts students).

Student Experience and Comfort Using Technology

Due to the demographics of the students involved in these three continuing education programs, in order to explore students' experience and comfort using technology, respondents were separated into three age categories: under 30, 30 to 49, and 50 or older. As predicted, both experience and comfort using technology vary as a function of age. Generally speaking, those students who are under the age of 30 are more experienced and more comfortable using technology than their counterparts aged 30 to 49 and 50 or older (see Tables 7 and 8).

More specifically, there are significant differences in experience using the Internet in general (p = .005), graphical and design applications (p = .001), presentation software (p = .003), HTML (p = .013), video editing (p = .000), audio editing (p = .004), and digital photography (p = .020). Further *post-hoc* tests reveal that for each item, significant differences (p = .035) exist between those students who are under 30 and those who are 50 or older, and in each case students in the under 30 group are significantly more experienced than those in the 50 or older group. For experience with video editing, audio editing, and digital photography, there are also statistically significant differences between students under 30 and those aged 30 to 49, with those under 30 also being significantly more experienced than those 30 to 49 years of age. Finally, statistically significant differences also exist between students aged 30 to 49 and 50 or older in terms of experience using graphical and design applications (p = .003). In this case, both students under 30 and

Table 6
Demonstrating Learning and the Importance of Reflection

	How important is it to you to be able to demonstrate your learning to others?		How important is it to you to be able reflect on what you've learnt through the program?	
Program	*M*	*SD*	*M*	*SD*
Residential Interiors	4.27	0.953	4.45	0.792
Fine Arts	3.57	1.244	4.11	1.025
Writing & Editing	3.48	1.438	3.80	1.193

Note. $^*p \leq .05$.

Table 7
Age and Experience with Technology

	Age					
	< 30		30-49		50+	
Technology	*M*	*SD*	*M*	*SD*	*M*	*SD*
Computers in general	4.06	0.933	3.99	0.848	3.67	1.039
Internet in general	4.36	0.783	4.08	0.829	3.80	0.917
Word processing packages	4.16	0.884	3.90	1.043	3.60	1.197
Graphical and design applications	2.58	1.200	2.54	1.246	1.99	1.229
Presentation software	3.06	1.190	2.65	1.313	2.25	1.373
HTML	2.48	1.326	2.23	1.206	1.83	1.063
Video editing	2.00	1.061	1.51	0.925	1.29	0.652
Audio editing	1.82	0.846	1.51	0.938	1.37	0.798
Digital photography	3.45	1.301	2.77	1.090	2.80	1.234

Table 8
Age and Comfort with Technology

	Age					
	< 30		30-49		50+	
Technology	*M*	*SD*	*M*	*SD*	*M*	*SD*
Computers in general	4.44	0.716	4.13	0.984	3.81	1.037
Internet in general	4.66	0.545	4.19	0.874	3.92	0.915
Word processing packages	4.48	0.851	3.95	1.153	3.72	1.168
Graphical and design applications	2.97	1.251	2.79	1.389	2.09	1.283
Presentation software	3.25	1.047	2.84	1.386	2.32	1.386
HTML	2.63	1.431	2.33	1.310	1.81	1.070
Video editing	2.28	1.198	1.84	1.175	1.47	0.900
Audio editing	2.06	0.982	1.81	1.147	1.52	0.971
Digital photography	3.63	1.070	3.04	1.191	2.94	1.254

those aged 30 to 49 are significantly more experienced than students 50 or older.

As shown in Table 8, a similar pattern can be seen in terms of students' comfort using technology. Statistically significant differences by age exist for comfort using computers in general ($p = .006$), the internet in general ($p < .001$), word processing packages ($p = .003$), graphical and design applications ($p < .001$), presentation software ($p = .001$), HTML ($p = .004$), video editing ($p < .001$), audio editing ($p = .003$), and digital photography ($p = .021$). Again, in each case, post hoc tests reveal that those students under 30 were significantly more comfortable than those aged 50 or older ($p < .020$). Students under 30 were also significantly more comfortable than students 30 to 49 in terms of Internet use in general ($p = .035$).

Finally, statistically significant differences existed between students aged 30 to 49 and 50 or older in terms of comfort using graphical and design

applications (p = .002), presentation software (p = .039), and HTML (p = .029). For these items, those aged 30 to 49 are significantly more comfortable than students 50 or older. There are no significant differences in experience or comfort using technology by gender.

Discussion and Conclusion

At the beginning of this paper, the following questions were asked: (a) Why use ePortfolios? (b) What are students' expectations of ePortfolios? and (c) What might be barriers to their effective use? By pushing these questions into the realm of continuing education, where very little research has been conducted related to ePortfolio use, the intention of this study was to expand the understanding of ePortfolio use in non-traditional learning environments. The results of this study demonstrate that ePortfolios, at least within a continuing education environment for disciplines in which traditional portfolios were used as required or recommended parts of the programs, are generally seen in a positive light.

The continuing education students who participated in our study agreed that portfolios, in general, were important aspects of their program and that the portfolio review process was an important component of their continued learning. Further, the results indicated that students were more inclined to believe that an ePortfolio would be as beneficial as or more beneficial than a traditional portfolio, particularly because of the ease of sharing work in a digital format. As indicated above, whether they were submitting works to their instructor for grading, sharing works with clients or galleries, or granting general access to the public, the convenience afforded by the ePortfolio was the main reason why students reported they might be useful. These results are similar in many ways to previous research done on traditional undergraduate and graduate student environments, as well as on learners in more informal learning environments (Acosta & Liu, 2006; Challis, 2005; Mason, 2006; Ritzhaupt et al., 2008).

Even with these positive perceptions of the use of ePortfolios, there remains a significant concern for the implementation of ePortfolios within the continuing education environment—the varied demographics of the students participating in such programs. The results of this study demonstrate that there are still significant differences between the experience and comfort level of younger and older students with various technologies that are key to the effective implementation of ePortfolios. These concerns resonate strongly with previous work by Van Wesel and Prop (2008), who identified self-reflection skills (moving past superficial to critical) and computer skills as the two keys for the successful implementation of ePortfolios. It also resonates with other recent research on the implementation of other learning technologies in continuing education, such as computer-assisted language learning (Wuetherick et al., 2015; Mason, 2006). If the variability in student skill levels is not addressed adequately as part of the program in the supports provided and the assessments used, it may result in unacceptable validity issues in the assessment of ePortfolios due to student variability.

In the end, with appropriate supports in place for students (Shepherd & Bolliger, 2011; Wang, 2009), it might be possible to mitigate many of these concerns within a continuing education environment. There are, however, additional concerns when the readiness of instructors to implement ePortfolios is added to the mix. While not formally included in the research project, when these research results on the students' perceptions of ePortfolios were shared with a meeting of the instructors in the three programs, they expressed an almost uniform concern that made it appear they were significantly more reluctant than students to want to use ePortfolios. Their concerns were primarily focused around the variability in students' experience and comfort level with technology, while also emphasizing their own variability in this respect. Instructor readiness seemed to be an issue at multiple levels, particularly with their personal technology-related skills and comfort level using these technologies, as well as their understanding of course design with ePortfolios (particularly how to undertake student assessment fairly). There also appeared to be several preconceptions about the usefulness of ePortfolios in certain disciplines and in certain courses. These concerns align with those articulated by Van Wesel and Prop (2008), who identified fair assessment (focusing on content rather than appearance due to variability in student technical skills), reviewer reliability (ensuring consistency despite a potential variability in appearance, in how each portfolio is reviewed), and the different course characteristics (recognizing that one size does not necessarily fit all, particularly when encouraging student creativity in their portfolios) as key challenges that need to be overcome in implementing ePortfolios.

The second key challenge that emerges from this study is the high importance that students placed on the transportability of their portfolio upon the completion of their courses or program. This pilot study was completed in the context of evaluating an LMS-embedded ePortfolio tool, to which students did not have access upon the completion of their program or even upon completion of their course, if their registration was episodic (which is quite common in continuing education environments). Anecdotally, when the results of this study were presented to students at a public forum, one student stated that if it was necessary

to migrate the portfolio to another platform in order to access it upon completion of the program, then why not just build the portfolio in that other platform when creating the initial portfolio. Indeed, these findings might reinforce Bolliger and Shepherd's (2010) model of using freely available tools, such as Google Sites, rather than relying on the LMS-embedded portfolio tool.

Even given these reservations about the readiness and willingness of instructors to use ePortfolios and the administrative IT challenges that need to be overcome related to the transportability of the ePortfolios, the results of this study demonstrate that it is time to consider seriously implementing ePortfolios in the realm of continuing education, particularly within those areas where traditional portfolios have been used historically. Due to the highly varied nature of the student body in such learning environments, however, the implementation of ePortfolios must be done thoughtfully and with the full suite of support mechanisms in place for students, including the development of peer-driven communities of support for the use of various tools in the creation of student ePortfolios, and with the full suite of support required for the valid and reliable assessment of ePortfolios by instructors.

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Appendix
Liberal Studies ePortfolio Survey

1. Have you completed or are you in the process of developing a portfolio as a part of this program?
   Yes
   No

2. How useful is the portfolio component of this program?
   Not at all useful
   2
   3
   4
   Very useful

3. What is the best part about having to complete a Portfolio? (Open-ended)

4. How beneficial is/was the portfolio review process?
   Not at all beneficial
   2
   3
   4
   Very beneficial

5. How important will a Portfolio be to you once you complete the program?
   Not important at all
   2
   3
   4
   Very important

6. Are there any aspects of the portfolio component of the program that you think might have been possible in an electronic form?
   Yes
   No
   If yes, why? (open-ended)

	Not important at all	2	3	4	Very important
7. How important is it to you to be able to demonstrate your learning to others?					
8. How important is it to you to be able reflect on what you've learnt through the program (e.g., see progress from class to class)?					

9. Have you had to create/use a portfolio in any prior learning experience?
   Yes
   No

10. How useful would it be to you to be able to record and present digital media and/or files (e.g., text documents, photos, audio files or video files)?
    Not at all useful
    2
    3
    4
    Very useful

11. Compared to a traditional portfolio, how useful would an ePortfolio be to you?
    Much less
    2
    About the same
    4
    Much more

12. If you were to create an ePortfolio, how important would the following be to you?

	Not at all important	2	3	4	Very important
a) Transportability (i.e., the ability to keep it even when you are done the course/program)					
b) The ability to include all forms of digital content					
c) The ease of storage					
d) Being able to give people remote access? (e.g., potential employers, instructors, colleges, galleries, etc.)					
e) Other (please specify below):					

Other (please specify):

13. Please rate your experience and comfort level with the following:

	Experience					**Comfort**				
	Not experienced at all	2	3	4	Very experienced	Not at all comfortable	2	3	4	Very comfortable
a) Computers in general										
b) Internet in general										
c) Word processing packages										
d) Graphical and design applications										
e) Presentation software										
f) HTML										
g) Video editing										
h) Audio editing										
i) Digital photography and editing										
j) Other (please specify below):										

Other (please specify):

14. Are you:
    - Male
    - Female

15. How old are you?
    - < 20
    - 20 - 29
    - 30 - 39
    - 40 - 49
    - 50 - 59
    - 60 - 69
    - > 69

16. Which program are you in? (Check all that apply)
    - Residential Interiors
    - Fine Arts
    - Writing and Editing

17. What is the highest credential that you've completed?
    - Less than high school
    - High School
    - Certificate
    - Diploma
    - Undergraduate degree
    - Graduate degree

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General Education and ePortfolios: Syllabi and the Role of Faculty

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A study of faculty views about General Education requirements, paired with a review of faculty syllabi, revealed concerns about communication of General Education goals to students. Syllabi reviewed were those for courses meeting the Natural Sciences General Education requirement. At our institution, students demonstrate Natural Science competency with work from various science courses that is deposited in an electronic portfolio. Electronic portfolios are evaluated systematically as part of the university General Education assessment plan. We explore possible reasons for gaps in faculty communication about the Natural Science competency requirement, including issues such as institution type and faculty desire for autonomy. Factors that contribute to the creation of successful syllabi are also reviewed, and we discuss how these factors could be employed to better communicate General Education requirements to students.

Syllabi are essential tools in the classroom, providing important sources of information for students about the course in general, assignment dates, instructor contact information, and much more. Our research team has been studying course syllabi as the mechanism for communicating institutional policies concerning General Education (Gen Ed). We reviewed syllabi from our particular emphasis area of Gen Ed, Natural Science (e.g., physical science, chemistry, biology, geology, physics, astronomy) to determine if they had components relevant to Gen Ed and its electronic portfolio (ePortfolio) reporting requirement. A major focus was to determine whether syllabi clearly mentioned the ePortfolio requirement and whether they described how assignments completed for the course might be used by students as effective ePortfolio artifacts. Results have shed light on the complexity of student and faculty perspectives with regard to Gen Ed and on syllabi in general.

Our institution is the state's public land grant university, with an undergraduate student population of approximately 17,000. The research mission is carried out not only by the approximately 4,000 graduate students, but also by a large number of undergraduates who participate in faculty-directed research as part of the Creative Inquiry Program. Creative Inquiry is team-based and offers class credit. Several Creative Inquiry students interested in the ePortfolio program performed the project reported here.

Our goal was to follow up on previous research that had been reported on by this research team in this journal, that concerned syllabi and how effectively students believed that they communicate class requirements (Appling, Gancar, Hughes, & Saad, 2012). The current study was initiated to investigate the topic of syllabi use from the point of view of the course instructor. Other researchers have observed that different disciplines vary widely on how much meaning and importance are attached to Gen Ed classes and that faculty members who teach Gen Ed courses emphasize deeper approaches to learning more than those who teach major-specific classes (Laird & Garver, 2010). Our institution's Gen Ed program is augmented by the addition of an electronic portfolio-reporting requirement for students, in which students demonstrate specific Gen Ed competencies using examples of their work from Gen Ed classes.

In its broadest context, our study was initiated as a cross-check on faculty activity relative to syllabus production for Gen Ed courses. Every semester, the Dean of Undergraduate Studies sends a "class regulations" letter to all instructors that contains information about what should be included in effective class syllabi. There are no other posted campus resources on the topic, and the elimination of a campus-wide new faculty orientation several years ago has left the task of support to word-of-mouth within departments. Faculty members have access to exemplars in the Syllabus Repository.

The Dean's letter does reference expectations for syllabus content in Gen Ed classes. In particular, it stresses that each Gen Ed syllabus must indicate relevant Gen Ed competencies and course assignments appropriate for students to use as artifacts in their ePortfolio. The ePortfolio Program maintains an office staffed with a director, associate director, and a cadre of graduate assistants available to help both students and instructors with issues associated with the ePortfolio requirement. Faculty are invited periodically to attend workshops dealing with Gen Ed learning outcomes and with how to align class assignments to them. The director of the program is available to meet individually with instructors to help them with these tasks, and she has several longstanding associations with faculty in

various disciplines that have engaged more deeply in the use of portfolios for their students. Our aim was to evaluate how well instructors were using their syllabi for communication with students about Gen Ed and the ePortfolio requirement, given that expectations are disseminated and resources are available. Preliminary observations from our student-based study indicated that there might be an issue with faculty follow-through.

Various studies of undergraduate class syllabi have been performed to identify syllabi functions, which are typically grouped into three categories: (a) as a contract between instructors and students; (b) as a permanent record; and (c) as a potential learning tool for students (Doolittle & Lusk, 2007). One can imagine an extensive list of items to be included in a syllabus to make it effective and fulfill these functions (for examples, see Berschback, 2010). Syllabi not only affect students, but also influence institutional aspects such as accreditation and faculty tenure review (Matthew, Bentz, & Fynewever, 2011). It is in an instructor's best interest to identify expectations and outcomes for their courses, as well as how students should attain them (Habenek, 2005). However, faculty and students seem to neither strongly embrace nor value the pedagogical function of learning objectives presented in syllabi (McDonald, Siddall, Mandell, & Hughes, 2010). Students read syllabi to determine how the course satisfies departmental and/or institutional requirements (Appleby, 1994), but this process is dependent on the clarity of how a syllabus communicates these goals.

Syllabus composition communicates the specifics of course learning as well as conveying an instructor's attitude toward students. A poorly composed syllabus can act as a barrier and elevate frustration between instructors and students (Appleby, 1994). A complete syllabus should make the students aware of how a course satisfies institutional requirements and should define course learning to improve student focus and develop student interest in learning (Appleby, 1994; Matthew et al., 2011). Communication through the syllabus about how the course is structured helps to reinforce learning expectations (O'Brien, Millis, & Cohen, 2008). Syllabi can also reveal how assignments may help students meet content and process goals. A "student-centered" syllabus can help students be more independent and encourage them to become self-regulated learners (Doolittle & Lusk, 2007). Additionally, the tone of a syllabus can affect how students approach a class. A "warmly-toned" syllabus tends to be more encouraging and generally results in positive student outcomes (Slattery & Carlson, 2005).

Despite recognition of the utility of the syllabus, there are differences in opinion among faculty about the perceived purpose of the document (Matthew et al., 2011). Research on syllabus design by faculty often focuses on included components, faculty and student perceptions, and content-specific effectiveness (Doolittle & Lusk, 2007). Our intent is to focus on the connection faculty make between their course and Gen Ed requirements by analyzing Natural Science syllabi. We are specifically interested in how well faculty communicate the ePortfolio requirement for documenting the Natural Sciences competency, which has been in place at our institution since 2005.

Methodology

Our research team consisted of several undergraduate researchers from various majors, all interested in communication and science education, especially as it pertains to the ePortfolio requirement of Gen Ed. Each student participated for several semesters, contributing to research design and data collection, including performing interviews with faculty members who taught Gen Ed science courses. These students were also responsible for formative assessment of artifacts submitted by students to meet the Natural Science competency, so they had intimate knowledge of the variety and quality of student work in this area. The faculty leader of the team serves as Associate Dean in the university unit responsible for implementing and managing the ePortfolio program and has taken a leadership role for the Gen Ed competency in Natural Science. The team's previous study of students' experiences with class syllabi and electronic portfolios (Appling et al., 2012) was survey-based. To learn more about the syllabi themselves and the construction of syllabi by faculty, the present investigation was designed as a mixed methods study (Clark & Creswell, 2007; Creswell, 2009). The research team gathered data on syllabi for Natural Science courses found in the university Syllabus Repository system. Analysis of that data led to subsequent interviews with several faculty members responsible for the creation of syllabi chosen from the results.

Natural Science courses were identified using the Gen Ed requirements available in the university undergraduate catalog (Clemson University, 2014). Sixty separate courses, including laboratory courses, were evaluated. Syllabi were acquired for sections from the most recent semester in which the course was taught. A total of 74 section syllabi were analyzed using a rubric devised by the research team. This rubric was tested on a random sample of ten syllabi before it was refined and applied to all 74 section syllabi.

The evaluation rubric has five categories that reflect the important aspects of syllabi relevant to communication of course attributes associated with Gen Ed and the use of electronic portfolios by students to document their competencies. These five categories and rubric values are as follows:

- Gen Ed: 0 (*not mentioned*), 1 (*mentioned*)
- Natural Science Competency: 0 (*not mentioned*), 1 (*mentioned*), 2 (*statement given*)
- ePortfolio: 0 (*not mentioned*), 1 (*mentioned*), 2 (*specific directions given*)
- Artifacts: 0 (*not mentioned*), 1 (*mentioned*), 2 (*specific assignment given*)
- Artifactibility: 0 (*none*), 1 (*ill-defined artifacts*), 2 (*well-defined artifacts*)

This last category, "artifactibility," was created to account for whether the syllabus described student activities that were appropriate for generating examples of work suitable for documentation in the students' ePortfolios. Course syllabi that scored poorly in other categories might still contain information indicating the potential for communication to students about generation of artifacts from coursework. All team members participated in a two-round rater comparison exercise using 15 randomly selected syllabi, resulting in rater agreement above 98% across the five categories. Course section syllabi were randomly assigned to team members for evaluation, and final values for any contentious items were determined by consensus of the team. Comments for each syllabus were also collected to provide additional insights.

Syllabi that had particularly high scores often had comments from evaluators about superior design and completeness. Four instructors responsible for these higher scoring syllabi were sought for interviews in an effort to learn more about faculty attitudes toward Gen Ed and its electronic portfolio requirement. Each faculty member was visited by two team members, and their answers to 12 standard questions (see Appendix) were audio recorded. Team members transcribed responses and subsequently coded them (Saldaña, 2009) into 20 categories for further analysis.

Results

The efficacies of Gen Ed syllabi were determined through qualitative analysis of a sample of 74 course syllabi that met the Natural Science (NS) and Natural Science with Lab Gen Ed requirements (Clemson University, 2014). A total of 57% of these syllabi came from courses in the College of Engineering and Science and the remaining 43% from the College of Agriculture, Forestry, and Life Science. Twenty-six of the 74 syllabi analyzed (35%) received a score of zero (the lowest possible score) in all five rubric categories, indicating that there was no mention of Gen Ed requirements, the NS competency, ePortfolio requirements, or artifacts. The majority (77%) of these deficient syllabi were from the College of Engineering and Science. Only two of the sampled syllabi received maximum scores in all five rubric categories.

As a basic component, a Gen Ed syllabus should note that the course meets a Gen Ed competency and is considered a Gen Ed course. A minority (41%) of the syllabi analyzed mentioned this fact. All Natural Science courses are expected to provide students with an avenue to meet the Natural Science competency (Clemson University, 2014). It was found that only 27% of syllabi specifically mentioned the NS competency. Of those that did mention the NS competency, 15% provided the correct statement of competency found in the undergraduate catalog. Evaluator comments noted that several syllabi mention other competencies instead of NS, or had an outdated competency statement. This revealed that instructors may not be aware of how their course fits the Gen Ed competency requirements.

The ePortfolio requirement was implemented in tandem with the development of the Gen Ed competencies in 2005. Students submit work from their ePortfolio as evidence that they have met the competencies and to build a database of student work. Student work is selected and evaluated after graduation to provide assessment of the Gen Ed programs. Of the syllabi studied, 42% mentioned the ePortfolio requirement and its relevance to the Gen Ed Natural Science course. Furthermore, 12% linked specific assignments to ePortfolio, a metric dominated by courses in the Biological Sciences.

To quantify the potential for student assignments meeting the ePortfolio requirement, syllabi were inspected to identify whether listed assignments could be used as artifacts (the rubric category, artifactibility). The artifactibility category was added since it was observed that some syllabi often included assignments that would be typical Natural Science artifacts but were not labeled as such. Some syllabi that scored low using the other research rubrics could have a high artifactibility score. However, two-thirds of syllabi did not exhibit an activity or graded assignment suitable for inclusion in a student's ePortfolio. About 23% of the syllabi provide assignments that are described fully and could serve as quality artifacts for students. It was found that of artifacts submitted for the Natural Sciences Gen Ed requirement, lab reports generally served as the best demonstrators of competencies being measured.

To learn more about faculty opinions that influence creation of syllabi, we interviewed four Natural Science faculty members who were identified from the data as providing particularly effective syllabi. Twelve standard questions were posed (Appendix), and themes/positions were extracted from transcripts of the interviews. All

interviews were conducted by student members of the team. Because of the team's affiliation with the ePortfolio program, faculty tended to dwell on the ePortfolio aspect of the questions, although questions were crafted to elucidate responses about Gen Ed, the Natural Science competency, and syllabus construction strategies.

All four faculty members believed there were certain aspects of the ePortfolio requirement that were useful and appropriate. However, the respondents were split on the value of the ePortfolio requirement: one stated that he thought it "has some valuable aspects," and another stated that he was "uncertain of the value of doing it." Two interviewees said specifically that they would favor some type of departmental assessment of Gen Ed instead of using the ePortfolio method. It is unclear what that would look like and whether faculty would actually want to perform this assessment. Previous discussions with faculty during the formative years of the program indicated that they were not interested in evaluating student work in ePortfolios as either advisors or curriculum committee members. One interviewee commented, "The day ePortfolio dies is the day that faculty have to do the assessment."

Three of the interviewees believed that grades alone are a sufficient measure of student competency in the NS (and in all the other Gen Ed competencies as well). One commented, "Why don't grades mean anything in these courses? That mystifies a lot of people." This represents a specific disconnect from the purpose of using ePortfolios to gather direct evidence of student work and to use ePortfolio data as a Gen Ed program assessment tool. There appears to be faculty misunderstanding about the utility for assessment provided by the ePortfolio requirement. Despite the fact that the requirement was created by faculty on the university curriculum committee, there is still some distrust about its origins. One interviewee commented, "There's generally a lot of unhappiness about how it was implemented—that the administration basically made a deal with the Devil." We assumed that the "Devil" refers to the university accrediting agency.

Three of the four respondents recognized that all Gen Ed instructors should do more to relay information about the ePortfolio to their students. One interviewee said, "We just really need to know what the competencies actually are and some general information about the nature of the artifacts." The competencies are published in the undergraduate catalog, and they are also available on the ePortfolio Program website, which has additional information about what constitutes a good artifact. One interviewee suggested a list of "dos and "don'ts," which are also already available online. All four responded positively when asked if they would use a syllabus template provided by the program to help outline the competency and defined the connection between a course artifact and the ePortfolio requirement. One interviewee commented, "Faculty need more than a template, they need more guidance about what constitutes an adequate artifact," even though this particular person had already shown that he was aware of the available resources either at the ePortfolio Program office or online. All four faculty members did seem to recognize that a lab report is the richest and most complete type of assignment appropriate for demonstrating the Natural Science competency. However, some also regarded homework assignments or exams as adequate artifacts. It appears that although resources already exist to address concerns of these respondents, they are not seeking them out (even when they know to send students to the same resources).

Discussion

Our university Gen Ed assessment depends on the acquisition of representative student work. Class instructors are crucial to this process—they should be providing students with directions to save their best work and add it to their ePortfolio. To help with ePortfolio artifact collection, the syllabus should contain goals that clearly articulate which assignments would be appropriate to fulfill any Gen Ed competency applicable to the class. Furthermore, these goals should have a rationale so that students have an understanding of why particular assignments are required and why they are important to their major or to Gen Ed (Slattery & Carlson, 2005). Strong course goals are helpful to students, but unfortunately syllabi are often variable in format and inconsistent in presenting learning objectives (Matthew et al., 2011). Based on the analysis presented here, this appears to be the case for Natural Science syllabi investigated in our study.

The condition of syllabi exposed by our study may jeopardize the university's program of assessment and accreditation. Accreditation guidelines indicate that curriculum evidence should appear on syllabi reflecting the institution's strategy to demonstrate student learning (Jacobson & Germain, 2004). Therefore, there is little reason for such information to be absent even if it is not felt that students need it (Habenek, 2005). The syllabus provides an opportunity to introduce assessment principles and how to use these principles to scaffold student learning (Matthew et al., 2011), which is an opportunity lost by our faculty. The perceived benefit of assessment to teaching and learning has been shown to be positively and significantly related to a faculty member's willingness to engage in assessment. The greater value that faculty see in the use of assessment to improve faculty teaching and student learning practices at the institution, the more likely they are willing to participate (Wang & Hurley, 2012). Our data suggest

that the connection to assessment is not strong in our faculty.

Instructors often seem to be motivated more by the desire to improve their own teaching, learning, and scholarship than by the desire to comply with institutional culture (Wang & Hurley, 2012). Higher education teaching is less supervised than other professions, and in part due to this freedom instructors must take the initiative to improve their own teaching skills (Berschback, 2010). Several respondents in our study expressed a strongly held sentiment that instructors should be able to do whatever they wanted in their classrooms. Autonomy is linked to not knowing—or caring—what others do and the conviction that there should be no mandates regarding teaching (Hora & Anderson, 2012). This mindset may manifest itself as reluctance by instructors to engage more fully in communicating institutional requirements.

Institutional type (i.e., research universities) can be a major influence on academic role performance (Milem, Berger, & Dey, 2000). Fairweather (1993) found that research activities are rewarded more than teaching and that teaching can be a negative predictor of rewards. Massy and Zemsky (1994) contended that faculty members have worked to increase their discretionary time by loosening their institutional ties and obligations. This causes more faculty time and energy to be focused on research and publication. Faculty members correspondingly decrease the amount of time spent teaching in the classroom, preparing for class, grading assignments, and meeting with students. The reward structure incentivizes faculty to make decisions that prohibit them from engaging in the types of contact with students that we know promote more positive outcomes (Milem et al., 2000). The so-called "academic ratchet" (Massy, 2004) produces a steady, irreversible shift of faculty allegiance away from the goals of a given institution and toward those of their personal academic specialty. Across all institutions, there has been an observed, statistically-significant decrease in the amount of time faculty spend advising and counseling students, with faculty at research universities spending the least amount of time advising students (Milem et al., 2000). This may account for some of the lack of engagement with our Gen Ed competencies, as Gen Ed tends to be of more interest to faculty with advising and curriculum assignments as part of their workload.

Using the syllabus to define learning objectives and feedback mechanisms clearly at the start of the course can reduce student confusion and promote student commitment to learning throughout the semester (Matthew et al., 2011). It is important that students know what is expected of them and how they will be assessed. Clarity and organization may motivate students to participate in assignments more willingly and with greater enthusiasm. With regard to Gen Ed, this may lead to a better understanding of the purpose of Gen Ed competencies and the need for assessment via the ePortfolio process. In the syllabus, the instructor can model enthusiasm for course content and convey a positive invitation to students to explore learning in the discipline (Habenek, 2005).

The relative scarcity of Gen Ed rationales in syllabi suggests that many of our faculty do not consider this their motivation for particular assignments, or at least fail to communicate this. We believe that providing an assignment's rationale on the syllabus is an opportunity to get students and faculty working together. This is an important piece that is missing from our current ePortfolio requirement. Students should be informed by their instructors about which assignments would be appropriate artifacts for a Gen Ed competency, and the instructor should work to create assignments for students that do just that.

Reaching the faculty to address these issues has been a challenge. Although resources are available and advertised, the faculty engaged with them are those that already have expressed interest in Gen Ed assessment. Results from the present study were forwarded to the ePortfolio Program director, which stimulated initiation of a similar investigation applied more broadly to other Gen Ed competencies. That data, which closely paralleled what is presented here, was subsequently provided to the faculty assessors who perform the summer summative assessment of ePortfolio artifacts. This faculty group expressed concern about the status of syllabi in Gen Ed courses and recommended to the University Undergraduate Curriculum Committee that actions be taken to communicate more concretely to departments about managing their syllabi. In time, this first step may lead to the oversight needed to correct the problem.

Conclusion

The present study helps to complete a picture of our university Gen Ed culture. Student frustrations with Gen Ed requirements, including the ePortfolio, were revealed in our first study and appear to be related in part to spotty communication from faculty teaching Gen Ed courses. In the Natural Sciences, syllabi tend to lack the information necessary to clearly show students the value of the course as it applies to both the development of student competency and how the course fits within the framework of the Gen Ed program. While students might not fully appreciate the value of a good syllabus for accreditation or for program integrity, they do expect a syllabus to provide the level of detail they need to navigate the course and any ancillary requirements. Instructors have yet to realize this goal within their own syllabi.

A student mechanism for feedback to faculty about this issue does not exist. Students are usually several semesters out of their Natural Science class when they complete their ePortfolios in preparation for graduation. It is unfortunate that for many students this simple task is not explained and encouraged at the time that they actually generate the artifact they will use to demonstrate their competency. With few exceptions the syllabi available to students seem to contribute significantly to the problem. However, students do not experience the effects until too late and are not in a position to let faculty know the extent of the problem. Thus, faculty are not aware that a simple addition to their syllabi could go far to clarify Gen Ed competencies for their students.

The problem is further exacerbated by the decentralization of the Gen Ed program itself. There is no coordinated supervision of Gen Ed; each department monitors separately any Gen Ed courses that it offers. Perhaps if departmental curriculum committees were more hands-on with their Gen Ed courses and monitored the syllabi, standards of communication might be established. Our results indicate that faculty can do this; they just need to be guided in a meaningful way.

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Appendix
Survey Items

1. What are your perspectives on the ePortfolio requirement?
2. How should the Gen Ed competencies be relayed to students?
3. Have you had questions from or dialogue with students concerning the ePortfolio?
4. Have you discussed ePortfolio with your faculty colleagues?
5. Should there be a template for the description of Gen Ed/ePortfolio available for faculty to put into their syllabi?
    a. If so, how should that template be made available?
6. What resources should be available to help faculty design their syllabi?
    a. If such resources existed, would you use them?
    b. Would your departmental colleagues?
7. In what ways does your syllabus cover the issue of Gen Ed competency in Natural Science?
8. Can you describe the work required in your course that could fit the Natural Science competency?
9. In your opinion, what does a satisfactory artifact for the Natural Science competency look like?

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Transformation Rubric for Engaged Learning: A Tool and Method for Measuring Life-Changing Experiences

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ePortfolios and other engaged learning experiences can have extensive impact on students in many facets of their lives, such as subject-area learning, skill and competence development, perspectives on "how the world works," and even students' own identities, confidence, and needs. Assessing these various impacts can be a challenge for faculty and program developers. Existing methods can determine students' attainment of competence, but very little guidance exists to help leaders determine the impact of their programs on the affective aspects of learning, such as changes in perspective and identity. This paper describes the Transformation Rubric for Engaged Learning, a tool and methodology for examining a program's impact beyond competency attainment in a systematic, replicable manner. The Rubric can be used in addition to existing program assessment methods to give a more complete assessment of a variety of programs, from reflective ePortfolios to community service projects to degree-granting programs.

Students often report that reflection or other engaged learning activities "changed my life" or "made me look at the world differently." Ironically, although academics provide students with tools for making sense of life-altering experiences (e.g., reflective portfolios), they still lack tools to help articulate and measure the impact of these experiences on students. The University of Michigan Dental Hygiene Degree Completion E-Learning Program (i.e., the E-Learning Program) has made a preliminary step in this direction, including the development of a rubric and methodology for defining and measuring changes in student confidence, skills, identity, and perspective on the world. This rubric and method can be used by institutions to measure the impact of any engaged learning experience, including academic programs, internships, service learning projects, co-curricular activities, theses and capstone projects, portfolios, or any other learning experience through which open-ended student responses are gathered. This paper describes the tool, its use, and preliminary results from the E-Learning Program.

Program Information

The E-Learning Program was launched in 2008 to offer an online option to an on-campus program that had existed for over 30 years. Degree completion programs provide the opportunity for dental hygienists with associates' degrees and professional licenses to complete the necessary remaining credit hours towards their bachelors' degree. The online delivery of this program afforded the opportunity to develop a new curriculum focusing on expanding dental hygienists' scholarship from basic clinical practice to include health promotion, community program development, clinical teaching experience, research, advocacy, and leadership. The E-Learning Program, which culminates in a Bachelor of Science in Dental Hygiene, comprises 11 courses over 2 years. Didactic instruction and course interactions happen online, and there are three opportunities for students to engage with their communities and apply their learning: a community project, a teaching practicum, and a capstone project. There are no lectures and no tests; instead, program competencies are measured through a variety of assignment types, including papers, projects, short case studies, and group work.

A key feature of the E-Learning Program is the integration of reflection and meta-reflection throughout the program, largely via an ePortfolio. It is important to note that the program does not measure student competence via ePortfolio reflections because competence is measured through other assignments, as described above. Instead, reflections ask students to explore their perceptions of their own abilities and their thoughts and feelings about their experiences. Students reflect on four program competencies at the end of each course, reflect on course goals twice per course, and may also complete additional reflections as determined by individual courses. Reflections are graded for the quality of a student's writing and depth of critical self-assessment.

In the final course of the E-Learning Program, students re-read all reflections to date and write "meta-reflections" on program competencies. They also develop final self-presentation portfolios, which include samples of work and synopses of students' individual skills and strengths. This showcase portfolio gives students the opportunity to articulate their achievements to an audience of their choice, typically a potential employer or graduate school admissions committee. As with the in-course reflections, grades are assigned based on the quality of the reflective writing; the portfolio itself is not viewed as proof of competence.

An extensive program assessment plan was in place and analyses were performed since the first year

of the E-Learning Program (Gwozdek, Springfield, Peet, & Kerschbaum, 2011). The first rounds of analysis showed the program to be academically rigorous (Springfield, Gwozdek, Peet, & Kerschbaum, 2012). However, that analysis found that competence-based program assessments did not adequately capture students' repeated assertions that the E-Learning Program changed their lives (Springfield et al., 2012). This paper describes the effort to investigate the affective, personally transformative aspects of the program in a more systematic, replicable fashion.

The authors of this paper include an instructional designer with expertise in planning and assessing online education (Author 1); a consultant with expertise in qualitative analysis, who led the rubric development and served as one of three unaffiliated data coders (Author 2); and the program director, who also taught several of the courses within the program (Author 3).

Need for a Rubric

The central problem facing those trying to articulate the benefits of rich, reflective, engaged learning programs is that observations of students, student learning, and student comments tell us that "something special" is happening in our programs. This "something" goes far beyond the types of skills and knowledge one would expect students to gain in a typical program of study. Students say of the program "it changed my life" or "I see the world in an entirely new way now." Even mature students—those in the E-Learning Program are coming back to college after an average of 7 years in professional practice—with personalities not generally given to exaggeration, report that "This is the best thing I've ever done," and "I didn't really understand at first but after the last round of reflections, I really started to get it why we are doing all these extra things." But what is "it"? Students and faculty alike—in this program and others in academia—agree that there is an "it," but are at a loss for defining it and explaining why it is important. Until we define and have a way of measuring "it," we cannot begin to understand the program features that make it happen.

Concepts such as confidence and "I think of myself differently" came up frequently in focus groups, so we looked first for an extant tool to measure program impact on affective traits such as confidence and self-perception. We reviewed the VALUE Rubrics from the Association of American Colleges and Universities (Finley & Rhodes, 2013), the Metacognitive Awareness Inventory (Schraw & Dennison, 1994), and the California Critical Thinking Skills Test (Facione, 1990). While all of these provide valuable information about individual students' skills, all are fairly narrowly focused on specific competencies. That is, these metrics assess the extent to which students have attained or improved a skill, but they do not examine students' perception of that skill or their personal reaction to having acquired that skill. Although skill achievement is certainly important, we believe that some of the most profound impacts of the E-Learning Program—which included extensive ePortfolio reflections, community engagement, and other authentic learning experiences—were not being measured by these standard assessments of competence.

Looking more broadly, the literature around transformational learning did speak to issues of education's impact on learners that goes beyond attainment of competence. A thorough overview of transformational learning was written by Baumgartner (2001), who defined transformational learning as learning that "changes the way people see themselves and their world" (p. 16). This gets at the heart of what we are trying to measure and corresponds to the categories of identity and perception eventually used in the rubric. Bandura and Schunk (1981) observed that skill acquisition often led to enhanced self-efficacy, confidence in one's ability to succeed on a task, and the belief that self-efficacy has a direct impact on performance in terms of task perseverance. This ties into the idea that confidence is important because it impacts professional performance.

Extensive discussion exists describing the importance of reflection and engagement for transformational learning (Mezirow, 1991; Taylor, 2007). Both King (2004) and Taylor (2007) stated that reflection involving written accounts of these intellectual and emotional connections to learning is significantly important in the transformative process, as it strengthens a person's analytical capabilities. Taylor (2007) described how higher education can foster transformational learning by creating active learning experiences that are directly related to content taught, are personally engaging, and stimulate reflection. Lastly, Kiely (2005) provided a thorough analysis of the educational psychology of learning, which is critical for understanding how to structure experiences to maximize student transformation. He also explained why reflection is a critical component of this process; however, it alone is not adequate to foster transformative learning. The literature suggests that it is a combination of both reflection and engagement that best supports transformative learning.

All of these sources are vital in describing how transformative learning can happen within individuals and programs, and can be used prospectively during program planning to develop experiences with a high potential to foster transformative learning. However, literature on transformative learning does not provide tools for measuring those impacts directly. The ability to quantify the personal, affective impact of programs is

key to illustrating the unique effectiveness of reflective and engaged learning experiences. Therefore, we chose to develop a method for measuring these additional impacts.

Purpose and Benefits of the Transformation Rubric

In a recent editorial, Rhodes, Chen, Watson, and Garrison (2014) called for more rigorous research into the impact and effectiveness of ePortfolio. We believe our approach, which focuses on portfolio-supported engaged learning, may be one answer to that call. The Transformation Rubric we present is a coding mechanism for analyzing the impact of ePortfolios and other engaged learning experiences on students' perceptions and understanding of their abilities, their motivations, and how they understand the world around them. This is a much broader goal than assessing "what students learned" or "are students competent?"; instead, it asks "how did students' understanding of themselves and their abilities change?" It is concerning that many deeply enriching student experiences (e.g., ePortfolios) may be in danger of being cut if meaningful impact cannot be demonstrated. Further, using only rubrics that assess competency achievement could undermine efforts to demonstrate impact because the impact of engaged, reflective initiatives like portfolios goes far beyond typical notions of student learning. All learning brings about change; what is needed is a way to differentiate between transformative and non-transformative changes. We believe that this rubric can be used to determine objectively the number of changes in confidence, skills, worldview, personal identity, and pride that students report as a result of their experiences. Even more significantly, it could be used to determine how profound those changes were—distinguishing between expected incremental changes and truly transformative changes. This helps paint a much richer picture of the impact of portfolios and engaged learning experiences, one that more accurately portrays their ongoing impact on students' lives.

This rubric is being offered for the use of the engaged learning community. Although we hope that it will be used as-is, the rubric is designed so that other program-specific topics of interest may be added. It can be used to analyze both data gathered for this purpose and previously-collected data, allowing for retrospective and longitudinal analysis. The potential benefits to the community include the following:

- Facilitating more objective evaluation of the transformational power of engaged and reflective learning beyond competency attainment;
- Developing a common vocabulary around transformative change;
- Achieving the ability to directly compare effectiveness of program designs and teaching techniques to maximize outcomes and to optimize inputs of faculty time, software support, and etc.;
- Increasing the power and validity of studies by facilitating inter-programmatic assessment;
- Reducing dramatically the amount of time needed to develop assessment measures.

Method of Development

Focus groups were held with graduating students as a standard component of the E-Learning Program evaluation. When reviewing themes in students' responses, we noticed that students spontaneously and repeatedly mentioned how the E-Learning Program had increased their confidence (e.g., Springfield et al., 2012). Faculty discussions suggested that the majority of students mentioning confidence were, academically, middle-performing students. This spurred interest in developing a more formal method of analyzing the E-Learning Program's impact on confidence and other factors, specifically comparing impacts between performance groups (high-, middle-, and low-performing students).

The author with expertise in data analytics identified qualitative analysis as an appropriate approach to our data. Qualitative analysis is ideal for identifying the themes of participants' open-ended responses, especially when researchers are un- or minimally-able to establish a set of analytic categories *a priori* from the existing literature (Auerbach & Silverstein, 2003; Brown, Tappan, Gilligan, Miller, & Angyris, 1994; Hill, Thompson, & Williams, 1997; Strauss & Corbin, 1994). In essence, this is a bottom-up approach to data analysis. Qualitative methods provide a systematic, documented, and audit-able structure for data analysis (Auerbach & Silverstein, 2003).

This author trained the other authors in qualitative methods and guided the rubric development process described below. Our qualitative analysis relied primarily on Grounded Theory (Strauss & Corbin, 1994) and borrowed from other approaches as well (Auerbach & Silverstein, 2003; Brown et al., 1994; Hill et al., 1997).

The steps are summarized here and described in more detail later. The first five steps were devoted to identifying and creating the coding categories (i.e., themes), using a combination of focus group transcripts and similar non-target data from course assignments. This allowed the primary investigators to identify a set of categories for use by a separate team of coders. The coders were trained using the non-target data (Step 6), and then analyzed the focus group data (Steps 7-9). The steps include the following:

1. Two investigators drafted an initial list of likely coding categories and definitions. The list was derived from a combination of theoretical (*a priori*) assumptions and items that emerged from the data. In essence, step one was to determine what "it" is that makes this program so impactful. This step distilled the essential impact down to transformative changes in perceptions, skills, identity, confidence, and pride.
2. The first and third authors read target data and refined the list of categories and definitions. This refined list became the draft coding rubric.
3. Using similar, but non-target, data, the second author used the draft coding rubric to categorize data to test it for comprehensibility.
4. All three authors met to discuss and refine the rubric.
5. Steps 2 through 4 were repeated as necessary until the codes and definitions were complete and understandable to people unfamiliar with the data.
6. The first author was identified as the leader of the coding process. The coding leader coded several pages of text from non-target data to create a master key for training purposes. She then trained two coders unfamiliar with the program and its data to use the coding rubric. Additional clarifications, examples, and minor changes were made to the coding rubric during the training process.
7. When each coder was able to match the key with 70% accuracy, the two trained coders and the second author (who also matched the key at least 70%) began coding target data. Each coder worked separately and submitted coded materials to the coding leader.
8. Group meetings of the coding team (i.e., a team including the leader and all coders) were used to resolve any discrepancies in coding and arrive at a final code. Discrepancies were resolved by 100% consensus of all coders. To minimize confusion across transcripts, the team coded and discussed one transcript in full before proceeding to the next transcript.
9. The coding leader maintained a record of all initial and final codes. During these meetings, the coding leader's role was to maintain records and ensure the fidelity of the coding scheme.

In practice, the coding rubric started with one item (confidence), quickly blossomed to over a dozen terms, and then was pared down to two major categories (type of change and degree of change), each of which had at least two subcategories or levels.

Steps 1 through 5 of process outlined above took over 14 months. Training the coding team required approximately two months and coding five focus group documents took ten weeks. Other institutions wishing to perform similar qualitative analyses can use this established coding rubric to begin at Step 6 (training coders), and thus complete the assessment in a relatively short period of time.

The Transformation Rubric: Definitions and Examples

Each data point (e.g., student comment in a focus group) was coded in two ways: (a) determining the degree of change and (b) defining the type of change. For example, a phrase may be coded as representing a transformative change in perception or a non-transformative change in skill. Type of change statements may be double-coded; for example, the same statement may indicate changes in skill and confidence. However, each statement can only have one degree of change; it is either transformative or non-transformative. The Appendix has a printable summary of this coding rubric.

Degree of Change

Some changes are more profound than others. In this rubric, we use the terms "non-transformative" and "transformative" to describe the difference.

Non-transformative change. Non-transformative changes are changes in extent/amount; they represent a quantitative change from an existing amount to a greater amount. Keywords suggesting a non-transformative change include: "improved," "enhanced," "better," "somewhat," "to some degree," and other phrases suggesting a moderate growth of an existing quality. For example, "I'm somewhat more confident than I was before" is a non-transformative statement because the change is moderate.

Transformative change. Transformative changes are changes that have substantially altered the student in some way; they represent a qualitative change to an entirely new state. Key phrases suggesting transformative change include: "I now feel," "life-changing," "all the time now," "much more/less," "I used to . . . but now I . . . ." For example, "I used to think of myself as a 'teeth cleaner,' but now I know I'm an important part of a patient's healthcare team" is a transformative statement.

Type of Change

Students may experience transformative and non-transformative changes in a number of areas. This rubric defines five types of changes.

Confidence. Confidence is the student's perception of comfort or perceived ability to do something. It does not necessarily denote an actual improvement in skill, but rather greater *belief* in one's ability to use a skill. "I'm much more comfortable treating patients with disabilities now" is an expression of confidence. Confidence is often double-coded with another type of change, such as skill.

Pride. Pride describes joy in an accomplishment, feeling good about one's self, satisfaction, and so on. It can sometimes be hard to differentiate from confidence. For example, "I was really proud of how much my writing improved" is an expression of pride.

Skills. Skills are anything the student has learned to do as part of the program. This includes psychomotor skills (e.g., teaching instrumentation), academic skills (e.g., professional writing), and interpersonal skills (e.g., intercultural communication). For example, "I am now able to communicate with patients in non-technical terms" is an example of a student recognizing a change in skill.

Perspective. Changes in perspective represent changes in how the student understands or sees other people or situations. For example, "I used to think most people on Medicaid didn't care about their oral health, but now I understand that their poor oral health is an access to care issue" indicates a change in perspective.

Identity. Changes in identity represent changes in how students understand or see themselves; for example, "I never thought of myself as a leader before, but now I do." A special case of the non-transformative identity code is when students describe how an experience confirmed an existing identification, desire, or motivation. We interpreted these statements as removing at least a little doubt and thus coded them as non-transformative. For example, "My teaching practicum confirmed that I really do want to be a teacher" is a clear statement of identity that indicates some change (from an implicit uncertainty to an explicit certainty) but not a transformation.

Do Not Code

The following items are not coded. In practice, we found it helpful to mark passages "do not code" or "dnc" to eliminate confusion. Types of items that are not coded include the following.

Statements about others. This rubric is interested with students' recognition of their own changes; therefore statements about others are not coded. For example, one student saying to another "Your writing has really improved!" would not be coded.

Statements of fact. Do not code lists of tasks performed unless accompanied by a clear, explicit statement that these were new or improved skills. For example, "I write well" or "In my practicum, I led discussion groups and graded papers" speak only about the student's state at that moment and do not explicitly indicate that a change has occurred.

Generic, vague, or unspecified change. These are items that indicate some level of change, but the change is not specific enough to fit into a category or is too vague to be a meaningful indicator. For example, "I've strengthened some traits and grown a lot."

Statements of projected future growth. Do not code statements such as "I will keep working on my writing in the future"; these are projections, not statements of change that have already occurred.

Using the Transformation Rubric

Once a rubric is decided upon (this one, a modification of this one, or a different rubric), the steps are straightforward:

1. Select data to be analyzed.
2. Select and train coders.
3. Code the data.
4. Analyze the data.

Types of Data that Might be Analyzed

Any open-ended, free-response data can be analyzed with this coding rubric. It is important that questions ask students to think about their growth and change, the value of the program, and so forth. For the E-Learning Program analysis, responses to focus group questions were used (see Table 1). This rubric could also be effective with:

- Portfolio reflections
- Student reflective essays
- Exit interview transcripts
- Open-ended written survey questions
- Online threaded discussion questions

To preserve anonymity, all identifying information within the data is replaced with randomly assigned identification numbers. A key that allows researchers to match coded transcript data to anonymized student profile data is maintained by one of the authors.

Selecting and Training Coders

Results will be most objective if people unaffiliated with the program under review are trained to code the data. Two or three coders are typically suggested (Auerbach & Silverstein, 2003; Brown et al., 1994; Hill et al., 1997; Strauss & Corbin, 1994). Use of people familiar with the students is possible, but increases the likelihood that anonymity will not be maintained as well as the potential for bias.

Table 1
Focus Group Questions Used in the E-Learning Program

The focus group data used to develop the coding rubric had the following questions:
• Did you have any a-ha moments?
• What does it mean to be a leader in dental hygiene? How do you think your views have changed compared to when you first started the program?
• How has your understanding of either your own career opportunities or careers for hygienists in general changed?
• How has your understanding changed of what it means to be a member of a multidisciplinary heath care team?
• What do you see as the role of reflection in your profession moving ahead?
• Do you notice differences between yourself and the people you work with *vis a vis* reflection?
• Can you identify something you do differently as a result of being reflective?
• Did your growth surprise you?

To train coders, the coding leader distributes and explains the codes along with some practice items. Coders then practice individually. The coding leader then meets with the coders and discusses the results. The coding leader may need to correct coders' understanding of the rubric or may need to refine the rubric further (or add more examples) in order to clarify. Repeat this process until at least 70% inter-rater reliability is achieved (Hill et al., 1997; Strauss & Corbin, 1994). Our experience suggests this will likely take four to six rounds of coding. During training, it is better to code smaller amounts of data and discuss the coding more frequently than to code larger samples with less discussion, because accuracy and inter-rater reliability are built through discussion and consensus.

Preferably, coders should be trained on practice data, not the data to be included in the final analysis (Brown et al., 1994; Hill et al., 1997; Strauss & Corbin, 1994). Consider using practice data in a pilot cohort that is not part of the full study or select a question that will not be included. If practice data cannot be found, train on a small subset of the final data, but re-code it after training is complete and all other data have been coded. For training, we used students' written reflections from an online class discussion; the selected text addressed types of change similar to those mentioned in the focus groups that were the final data set.

Coding

Once inter-rater reliability has achieved a minimum of 70% agreement, coding of actual data can begin. Each coder should work alone to code the data or a portion of the data. Then, as in the practice rounds, the coders meet with the coding leader and come to consensus on the final code (Auerbach & Silverstein, 2003; Hill et al., 1997). The coding leader generally does not interfere with the consensus process, unless the coders cannot reach consensus or have clearly misunderstood the coding rules. In this rubric, every coded passage must be coded for depth and type of change, and more than one type of change may be applied to each passage. For example, the same passage may be coded as skill, confidence, and transformative.

At the end of the training phase, all three coders were in agreement for more than 70% of items. Across the five focus groups, the three-person agreement rate for our five categories fell to 33.6%; two person agreements accounted for another 50.6% of coded items (Cohen's kappa ranged .31 to .36), indicating that we had agreement between at least two coders for 84.2% of items. On the practical level, these issues caused us to spend more time discussing each transcript in order to achieve consensus. Assessment of transformation was better, with a 61% rate of three-way agreement (Cohen's kappa = .31-.41) across the five focus groups.

We identified three distinct reasons for the drop in agreement. First, the training materials were drawn from an online discussion thread with more narrowly worded questions that rarely had passages that could be double-coded. In contrast, student comments in the focus groups lent themselves to multiple type-of-change codes; for example, identity and confidence. It was common for Coder A to mark a passage as identity, Coder B to mark it as confidence, and Coder C to mark it as both. After discussion, the group would often agree on a final code of identity and confidence. By strict count, only Coder C matched the final code 100%, even though the other two coders matched the final code 50%.

The second factor was the difficulty of deciding how much text to code for context. For example, Coder A might code all five sentences of a paragraph as skill, while Coders B and C only coded the last two sentences as skill (deeming the first three sentences to be contextual but not critical to code). In this case, 100% agreement was achieved for two sentences ,but three

sentences did not have 100% agreement, simply because Coder A coded more sentences for context.

Finally, after one coder repeatedly coded passages as both identity and perspective, we clarified that these two categories were generally mutually exclusive, since identity focuses on the self and perspective focuses on other people. This resulted in increased consensus in the final three focus groups. Given the high rates of partial agreements among coders and the use of a full consensus procedure to reconcile disagreements, we believe that our results provide an accurate summary of students' comments.

Practical Issues

Coding leaders need to decide what size unit of text to analyze: a phrase, a sentence, or a paragraph (Auerbach & Silverstein, 2003; Hill et al., 1997). In this analysis, we generally worked with one sentence at a time, unless students included multiple distinct thoughts in one run-on sentence. In that case, the sentence was divided into phrases at logical changes in topic.

This group of coders found it easiest to track codes by working on individual word-processed documents, highlighting passages, and inserting comments with the code(s) in the comment (see Figure 1). This allowed the coding leader to know exactly where adjoining codes started and ended. Each coder worked on a separate copy of the document and then sent the coded document to the coding leader.

The coding leader then transferred the codes to a spreadsheet containing one row for each sentence or phrase of the focus group transcript and columns for each coder's responses. The spreadsheet can then be used to calculate the percentage agreement between the coders (see Figure 2). When coders provide multiple codes for the same phrase, that line should be listed multiple times in the spreadsheet and each code entered on a single line. During the consensus meeting, the coders decided on the final code (using their own coded documents for reference) and the coding leader recorded the final code in the spreadsheet (see Figure 2). The spreadsheet could then calculate how often each coder's original code matched the final code and gave some sense of the individual accuracy of each coder. Experience strongly suggests also noting the final code on paper as well as on the spreadsheet, in case of file corruption or loss. The coding leader should maintain copies of both the original coded documents and the final codes.

For smaller data sets, each item should be coded by two to three people (Auerbach & Silverstein, 2003; Hill et al., 1997). For large data sets, more coders may be needed, but every coder does not need to review every document. Instead, simply assign two to three coders to read each document. Vary the coder groups so coders A, B, and C are not always working on the same data. Instead, have coders A, B, and C work on one source and coders A, D, and G work on a second source, and so on.

Analyzing the Data

Setup. The first step toward analysis is to input all the data into a qualitative statistical software package (e.g., Nvivo). Source files (e.g., focus group transcripts) must be imported and marked up according to the final codes determined by the coders. A spreadsheet of student characteristics is also needed to create subgroups or to compute correlations, if desired. Typical characteristics include each student's code name or number, cohort (if examining multiple groups), GPA, gender, ethnicity, age, and etc. Other factors of interest tracked included class rank grouping (1st, 2nd, and 3rd tertile by GPA), overall portfolio reflection grade, years elapsed since last degree earned, and number of children cared for during the program.

It may also be helpful to track data concurrently in a quantitative statistical package such as SPSS. This is helpful for computing basic quantitative measures, such as number of participants in pre-specified categories (e.g., gender or racial groups), computing correlations among student characteristics, or determining the best ways to group students.

Analyses. Users of the Transformation Rubric may then perform the analyses they desire on the data. We assume that many users will wish to perform analyses such as the following:

- Determining how frequently each type-of-change code appears in the data, (a) for the entire group and/or (b) for each subgroup (e.g., cohort, grade rank group, gender);
- Determining how frequently transformative and non-transformative changes occur (a) for the entire group, (b) for each subgroup, and/or (c) to compare the percentage of transformative vs. non-transformative changes overall and for each type of change;
- Determining how frequently each type of change is related to different parts of the program in order to help determine which parts of the program elicited the most (transformative) changes (a) for the entire group and/or (b) for each subgroup (e.g., cohort, grade rank group, gender).

Because the rubric is so new, it is not yet known what may constitute a threshold for a transformative program. We hypothesize that students in all types of programs will report changes, but that the changes in highly engaged programs with reflective components

Figure 1
Using Comments to Code Data

1: I wanted to go back to (stu 2) comment about professional writing expectations as a highlight of the program. One of the things I think I grew the most in in this program was my writing ability. I look back on that and I'm so glad that I had that opportunity. I appreciate the high expectations that this program has. I think that ability to write at a professional level is a springboard for everything else we're going to do - whether it's doing community projects or teaching and writing lesson plans, or whatever. I think the principle writing element is critical to any future profession for students. That was a highlight for me.

Comment [AI7]: Skill, TR

Comment [AI8]: Perspective, TR

Figure 2
Spreadsheet for Tracking All Codes

Line #	Stu #	Text of response	Final		Coder 1		Coder 2		Coder 3	
13	5	But I really liked to be able to do the whole studen	dnc		dnc		dnc		dnc	
14	5	It was really cool to be able to go into a college an	dnc		dnc		dnc		dnc	
15	5	Usually you can't just go to a place and say "Hey, t	dnc		dnc		dnc		dnc	
16	5	I think the teaching was the most memorable for r	Ident	TR	Ident	TR	Ident	TR	Ident	NT
20	4	I agree with 5 on that - the teaching was very eye-c	Ident	TR	ident	TR	Ident	TR	Ident	TR
20	4	I agree with 5 on that - the teaching was very eye-c	Persp	tR	Ident	TR	Persp	TR	Ident	TR
21	4	The program director had me doing more logistic	Ident	TR	Ident	TR	Ident	TR	Ident	TR
21	4	The program director had me doing more logistic	Persp	tR	Ident	TR	Persp	TR	Ident	TR
22	4	I had thought that I wanted to be a teacher prior to	Ident	TR	Ident	TR	Ident	TR	Ident	TR
22	4	I had thought that I wanted to be a teacher prior to	Persp	tR	Ident	TR	Persp	TR	Ident	TR
23	4	I've had deal whether or not I want to step into a te	Ident	TR	Ident	TR	Ident	TR	Ident	TR
23	4	I've had deal whether or not I want to step into a te	Ident	TR	Ident	TR	Persp	TR	Ident	TR

will be relatively more transformative than standard lecture-test programs.

Preliminary Results for the E-Learning Program

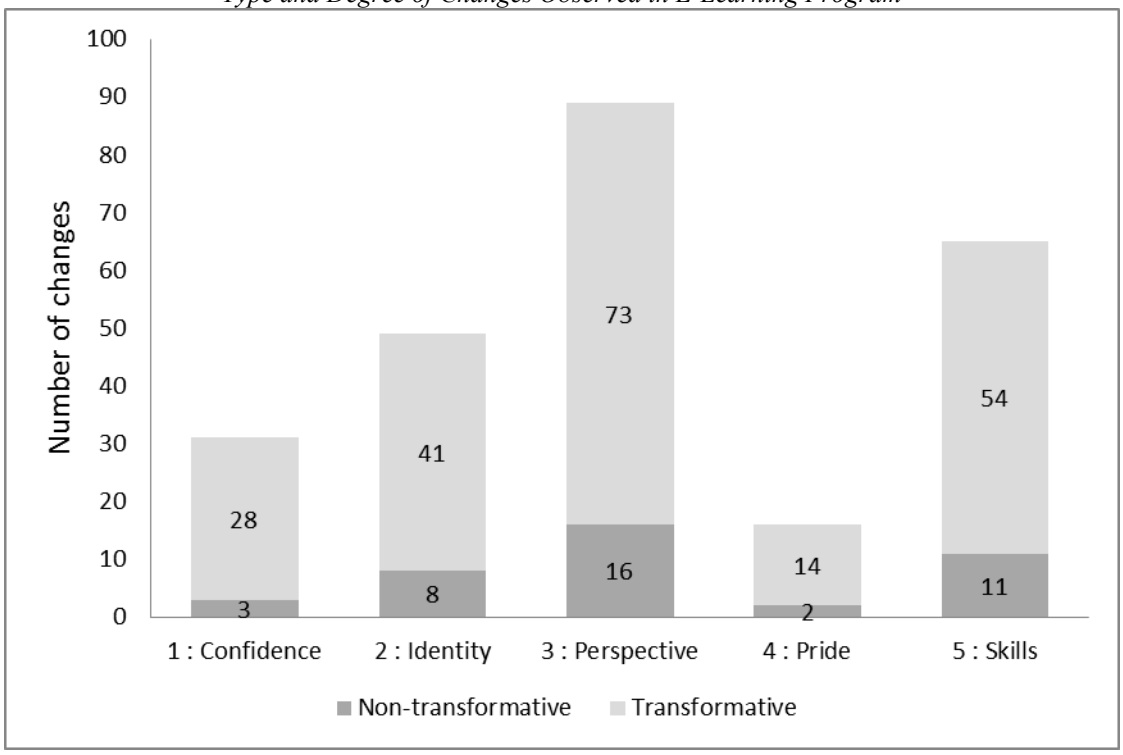
Using the Transformation Rubric and methodologies above, the following preliminary results were obtained for the E-Learning Program. The frequency of each type of change across the first five cohorts of students in the E-Learning Program is provided. Each focus group was held around graduation. Out of the 1,045 statements made by the 30 students who participated in the five focus groups, we identified 249 changes. Over a third of those changes were perspective changes (36%). Pride was the least-reported change (6%). On average, each student reported 8.3 changes. The frequency of transformative and non-transformative change is shown in Figure 3. Overall, 210 of the changes reported (84%) were transformative changes, with only 40 of the reported changes (16%) being non-transformative. On average, students reported seven transformative changes and 1.33 non-transformative changes.

Conclusion and Next Steps

Students often report that educational experiences have changed theirs lives but educational researchers have had great difficulty documenting these changes outside of anecdotal reports. This stands in contrast to efforts to document changes in students' knowledge and skills, for which a variety of systems exist. In this paper, we have provided a tool and methodology for objectively measuring a program's impacts beyond attainment of competence: the Transformative Rubric for Engaged Learning. Preliminary analysis of our E-Learning Program shows that over one-third of the changes reported by students were perspective changes, that is, differences in the way students perceive their work, patients, field, and concepts such as leadership. Over a quarter of the students also reported changes in their clinical, interpersonal, and technical skills. The vast majority of changes were transformative in nature, suggesting that graduates not only have better knowledge of their field but also see their field and themselves very differently than when they entered the program.

Many ePortfolio and engaged learning programs stimulate dramatic changes in students' lives, but lack a

Figure 3
Type and Degree of Changes Observed in E-Learning Program



way to measure that impact simply and directly. If the rubric becomes a widely used instrument, we expect three main benefits. First, programs that foster transformational learning will be able to measure and describe their students' confidence, identities, perceptions, pride, and skills in addition to the competency assessment tools already in use. This will help ensure the continuance of these programs in a time of increasing budgetary uncertainty. Second, if programs' non-competency outcomes can be measured in a systematic way, program inputs (e.g., faculty and staff time) can be optimized because the impact of changing inputs can be observed in program outcomes. Finally, with a standardized method for analysis, highly impactful programs can be identified and best practices shared, thus improving learning for students in a wide variety of programs.

What is most needed now is experimentation within the community to use the rubric to analyze a variety of programs, including both programs with heavy emphasis on engagement and reflection and more traditional programs. This will allow the community to:

- assess the validity of the Transformation Rubric as a tool for measuring transformational change across a variety of programs, subject areas, and student demographics;
- start understanding what program features contribute most to actual transformative outcomes; and
- start building an objective picture of the impact of engaged learning activities beyond attainment of competence.

Ideal subjects would be programs about to undergo a significant increase in engaged curricula or teaching methodologies (e.g., introducing a reflective portfolio). By analyzing data from students before and after the change, it should be possible to see if the new curriculum engenders more transformative changes than the old program.

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Appendix
Printable Rubric

This document was developed in 2013 at the University of Michigan School of Dentistry using the grounded theory methodology (Strauss & Corbin, 1994). It can be used by researchers to investigate the impact of a wide range of engaged learning opportunities, such as reflection, portfolios, service learning, clinical practice, and simulations. Changes in five areas are currently defined, as well as two levels of change: transformative and non-transformative. This rubric can be used to code data from a number of qualitative sources: open-ended survey questions, focus group transcripts, student essays or reflections, and so on. Once coded, changes can be analyzed to determine program impact. See the associated paper for details for use.

Type-of-Change Codes		
Code and Description	**Details**	**Keywords & Examples**
Confidence: Students' perception of their comfort or perceived ability to do a thing	This is NOT better skill, but rather greater *belief* in one's ability to use a skill. Often double-coded with skill or identity. For example, "I am much more confident about my writing skills" would be double-coded for both Confidence and Skill.	Confident, comfortable, easy, no longer a problem "I used to be terrified of public speaking, but now it doesn't bother me." "I'm much more comfortable networking now."
Pride: Expressing gratification in an accomplishment	Similar to confidence, but usually very explicit about being proud of a skill.	"I found it rewarding to…" "I was so proud that I…" Do not code generic statements such as "I'm so proud of all of us"
Skills: anything the student has learned to DO as part of the program.	Teamwork, relationships, "soft" skills Clinical skills Communication/presentation skills Teaching skills Leadership skills (I have improved my leadership skills, like listening, communicating, etc.)	"I can now…", "I have improved…", "I [verb] better…" "I have become more [adjective]…"
Perspective: changes in how the student understands or sees *other* people	Externally focused I understand SOMETHING ELSE (outside of myself) differently than I did before How I perceive other people is different How I think/believe the world works is different I have a different understanding of my profession now	"I see leadership in a different way; I used to think leadership was X, now I think it's Y." "I never realized how hard it is to sign up for Medicaid." "I used to think the best way to change someone's mind was to give them more data. Now I know it's more complicated."
Identity: Changes in how students understand or see themselves.	Internally focused Vision of self, career, path Traits about myself: I AM a different person or kind of person Change in motivation or direction (I'm now motivated to…) Confirmation of motivation or direction (non-transformative change only)	"I *am* now…" "I have become a better [noun]…" "I see myself as a Leader; my vision of *myself* as a leader has changed" "I confirmed that I still want to…" (always non-transformative) Role, see myself

Extent-of-Change Codes		
Code and Definition	**Examples**	**Keywords**
Transformative change: The student recognizes that change occurred AND the change has substantially altered them in some way.	Qualitatively different; different in kind The way the student conceptualizes this issue is significantly different than it used to be	"I now feel . . ." "I used to . . . but now I . . ." Life-changing, no longer, not anymore, all the time now, changed a lot, much more, in a different light, enlightened,
Not transformative change: The student sees a change in extent/amount.	Quantitatively different; different in amount No "generic" statement can be transformative	Enhanced, acquired, improved, better than before, somewhat, to some degree, a little

Do Not Code Items in this category will not be counted or analyzed. Use this code to clearly mark passages that should not be coded to avoid confusing and time-consuming re-reading.	
Statements about others	"Your writing has really improved!" Student must be observing her own changes. "We've all grown"
Statements of fact	Lists of tasks performed, unless accompanied by a clear, explicit statement that these were new or improved skills. "I write well." (We don't know if she did before or not.) "I see myself as a leader." (We don't know if she did before or not.) "Doing X was useful." (We are interested in whether it was also a change.) Any statement that highlights a fact about a current state, with no suggestion that a change has occurred. The coder should not infer that a change has happened; we are interested in whether the student herself noted the change.
Generic, vague,or unspecified change	"This program prepared me to move forward" "I've strengthened some traits and grown a lot"
Statements of projected future growth	"I'm sure we will continue to grow" "I will keep working on my writing in the future"

Notes regarding context:

You may use the context of a paragraph to determine if something is a change (vs. a statement of fact). You may wish to look at the paragraph as a whole and determine whether there was a substantive change or not; then look for specific instances line-by-line.

Do not make assumptions based on context outside the paragraph. For example, do not make assumptions about students' motives, prior abilities, or former actions.

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Developing a Pathway for an Institution Wide ePortfolio Program

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A grassroots committee of faculty and administrators from eight academic and student service units at the George Washington University used a five-phase process to identify the ePortfolio needs of its diverse community; select appropriate technologies to support the breadth of functions required; perform usability studies; pilot test the platform; and evaluate the outcomes of this process. The ad hoc committee identified a wide range of unique uses of ePortfolios, including: facilitating reflection and critical thinking; documenting student learning and program outcomes for accreditation purposes; facilitating advisement; and highlighting student skills and accomplishments for potential employers and graduate schools. As a result of these grassroots efforts, the Office of the Provost funded a pilot test for 1000 participants to use the selected ePortfolio solution. Key outcomes of the process include assessing the feasibility of a unified, university-wide ePortfolio platform; creating a structure for a centralized approach to faculty and student development; and obtaining data to support future decision-making regarding long-term adoption of the ePortfolio platform. Further, the work of the committee led to the development of a learning community comprised of ePortfolio champions and early adopters, which will be critical to the potential long-term, university-wide adoption of ePortfolios.

As educators, we embrace the importance of reflection to support student learning and development during the course of their studies and, post-graduation, as lifelong learners. Using ePortfolios is an effective means of enhancing student reflection and learning across curricular and co-curricular activities, and documenting and promoting the effectiveness of our work. When implemented with strong faculty guidance, ePortfolios can promote deep and reflective learning (Zubizarreta, 2004). They enable students, faculty, and administrators to curate evidence of learning in creative ways that are not possible with typical paper-based methods. For example, ePortfolios enable learners to demonstrate, reflect on, and easily share scholarly and other work products using graphics, video, web links, and presentations. In addition to facilitating reflection and shared learning, ePortfolios can be used to assess complex, higher-order student competencies, such as critical thinking and applied knowledge and skills, more authentically than traditional score-based assessments to provide evidence of educational program effectiveness (Lorenzo & Ittelson, 2005a, 2005b). Further, ePortfolios have been used to help students promote their achievement to employers who are increasingly seeking evidence of real-world competencies in those they hire (Hart Research Associates, 2013).

There are many examples of creative and effective uses of ePortfolios at the course and program levels, often initiated by faculty who recognize the ePortfolio's value as a learner-centered teaching tool (Lorenzo & Ittelson, 2005b; Ring, Weaver, & Jones, 2008). To optimize the value of ePortfolios, in terms of both student engagement and economies of scale, it is important for academic institutions to consider broader adoption of a common platform that can be used by students, faculty, and administrators in a variety of ways—inside, across, and outside of individual courses. Adopting new technologies such as ePortfolios at the institutional level is a complex process, however. It can be difficult to meet the disparate needs of different disciplines and degree levels and to navigate across complex academic and administrative structures. Faculty, administrators, or others interested in implementing any type of new technology solution are often challenged to evaluate diverse needs and to assess the ability of various solutions to meet those needs. To address these types of functional and structural challenges, identify an optimal solution, and provide evidence of value to decision-makers, a comprehensive evaluation process is critical.

This paper presents a five-phase model used at the George Washington University to meet the needs of its diverse stakeholders and to guide institution-wide adoption of an ePortfolio platform. The model evolved out of a collaborative, grassroots effort driven by faculty and administrators who recognized the potential value of a common ePortfolio platform to meet a wide range of academic and co-curricular needs. The outcomes of this process will drive institutional decision-making related to possible enterprise-level adoption and integration of the chosen platform with existing administrative and learning management systems to support both on-campus and online teaching and learning activities.

Background

The adoption of ePortfolios at the institutional level is growing. Based on interviews with 14 ePortfolio vendors, Baston (2012) concluded "typical campus implementations have moved beyond scattered

individual and program pilots to large program rollouts" (p. 1). This observation is supported by evidence from annual surveys of the Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL). Results of the 2012 AAEEBL survey highlighted a shift from a higher percentage of participants reporting a course-level focus to a higher percentage of participants reporting a program or department focus-based, with a relatively small number of participants reporting an institution-wide focus (Brown, Chen, & Gordon, 2012). In the 2013 survey, reports of institution-wide initiatives increased to exceed the percent of participants reporting either a course or program/department-level focus (Brown & Chen, 2014).

Institution-wide ePortfolio implementations can support a wide range of educational and co-curricular needs. ePortfolios can serve multiple purposes, including course and program planning and evaluation; facilitating, documenting, and tracking learning and development within and across courses; monitoring and evaluating individual and program performance over time for purposes of accreditation; and developing resumes and supporting job searches (Lorenzo & Ittelson, 2005a, 2005b; Housego & Parker 2009). ePortfolios can provide evidence of teacher performance through teaching portfolios; student performance through student, course, or program portfolios; and program performance through evidence of learner achievement for program accreditation. ePortfolios enable students and faculty to reflect on and document their learning, development, and progress (Housego & Parker, 2009). As an effective teaching and learning tool, ePortfolios enable users to collect artifacts, reflect on learning activities, self-evaluate products and/or processes, evaluate products and/or processes, and present themselves (Himpsl & Baumgartner, 2009).

Because ePortfolios enable students to document, reflect on, and display their professional growth throughout their academic experience, they offer an excellent way for students to demonstrate "authentic learning" (i.e., educational curricular and co-curricular activities that reflect creativity, critical thinking, problem-solving, and applied knowledge and skills; Reese & Levy, 2009). Thus, ePortfolios can provide potential employers with tangible evidence of students' competencies related to real-world practice. In a recent survey of employers, 83% viewed ePortfolios as a useful indicator of job applicants' potential ability to succeed in the workplace (Hart Research Associates, 2013).

Implementing an ePortfolio at the institutional level is a complex process that requires careful planning. Before considering institution-wide implementation, the institution must define its purpose or purposes for using ePortfolios, which, as noted above, can range from learning, to assessment, employment, and finally to lifelong learning. In doing so, Balaban, Divjak, and Mu (2011) emphasize the importance of considering all stakeholders and propose a meta-model that considers three levels of stakeholders: individual (student and faculty), institution, and employer. To promote acceptance throughout the institution, these authors further recommend introducing the ePortfolio at three levels. At the strategic level, the ePortfolio should be consistent with the institution's mission, vision, and strategy; at the tactical level, the teaching and learning processes that the ePortfolio is intended to support must be carefully defined; and at the operational level, the hardware and software infrastructure and user acceptance are important factors to consider. Finally, to ensure long-term use and sustainability, Lorenzo and Ittelson (2005b) raised additional issues for consideration, including support and scalability, security and privacy, ownership and intellectual property, assessment, adoption, and long-term maintenance.

Successful implementation and institutionalization of any new technology depends upon acceptance and adoption by its end users. Perceived usefulness, ease of use and service quality have been shown to significantly influence users' attitudes and satisfaction toward ePortfolios, underscoring the importance of providing adequate support to promote user self-efficacy (Chen, Chang, Chen, Huang, & Chen, 2012). Based on their experience with a program-level ePortfolio initiative, Housego and Parker (2009) outlined a broad set of processes and supports required for successful implementation. Students require both educational and technical support. Educational support includes reinforcement of the value and purpose of the ePortfolio, of the competencies expected, and of how they map to the curriculum. Students also need guidance on reflective writing, presenting information for different audiences, and in the technical use of the ePortfolio content development and media features. Additionally, opportunities for informal and formal assessment and feedback on the ePortfolio at different points within the program are helpful. Faculty members and administrators require similar support, including curriculum maps that link competencies throughout the academic program as well as professional development in the pedagogy of ePortfolios within and across courses for teaching and assessment purposes. Faculty members and administrators also require an infrastructure that considers processes, resources, and workload allocations to support changes in teaching, learning, and assessment activities.

Although ePortfolios offer a wide range of benefits to all stakeholders, long-term, wide-scale adoption of ePortfolios in the university setting is not without its

challenges, regardless of whether the adoption is implemented in a top-down or bottom-up manner (Beishuizen et al., 2006). A lack of perceived need among different user groups, perceived costs (i.e. financial, time, effort) vs. benefit, lack of a shared vision and coordinated strategy for implementation, and inadequate integration with other technology systems are among the challenges noted (Reese & Levy, 2009). Further, as described by Rogers (2003), diffusion of innovations such as ePortfolios begins with "*initiation*, consisting of all of the information gathering, conceptualization and planning for the adoption of an innovation, leading up to the decision to adopt" (p. 421). Early adopters who provide information and model the adoption of an innovation within their respective local units can help speed up the diffusion process and move an organization toward "*implementation*, consisting of all of the events, actions and decisions involved in putting the innovation into use" (Rogers, 2003, p. 421). Developing and communicating a shared vision, obtaining organizational support, creating short-term successes upon which to build, and communicating those successes can all serve to mitigate the challenges of implementing wide-scale changes such as the implementation of ePortfolios across a campus (Gesme & Wiseman, 2010; Kotter, 1995).

ePortfolio Adoption Model

A group of faculty, administrators, and staff representing five schools (arts and sciences, public health, medicine and health sciences, professional studies, and nursing) and three administrative units (teaching and learning, student affairs, and academic technologies) came together as an ad hoc committee to consider how their independent ePortfolio initiatives and interests might be woven together into an institution-wide implementation to meet a range of educational needs. This grassroots initiative began with pockets of faculty and staff throughout the university who were using ePortfolios within courses, and in two cases, across the curriculum of a program. Some units had adopted freely available online tools while others had been using the portfolio features of the university's learning management system. All had encountered challenges due to lack of usability, insufficient support, and other limitations, primarily at the technical and operational levels.

In response to requests from these units for a better ePortfolio platform, the university's central Teaching and Learning Center (TLC) reached out to schools and departments across the institution to identify other groups that might have a need for a new ePortfolio solution or that might be interested in implementing an ePortfolio program for the first time. The broad interest from different schools and departments closely followed the teaching and learning, assessment, and career search categories, as described by Lorenzo and Ittelson (2005b) and Housego and Parker (2009). The challenges encountered, along with the wide range of purposes identified, reinforced the potential need for and value of a robust institution-wide ePortfolio platform.

The TLC invited those interested to serve on an ad hoc university committee whose goal was to address the very diverse ePortfolio needs of administrative and academic groups at the university. To achieve its goal, the committee met several times to develop a process to identify needs and challenges individuals faced in implementing ePortfolios. Once identified, the appropriate infrastructure (i.e., platform) could be determined, implemented, and evaluated, and then a shared vision developed and communicated, which will be essential for long-term, widespread use of ePortfolios across the university. The committee used a process grounded in concepts of change management and developed strategies to overcome some of the challenges noted in the literature (Gesme & Wiseman, 2010; Kotter, 1995; Reese & Levy, 2009). The result was a five-phase process, which included completing a needs analysis, selecting a platform on the basis of desired features, platform usability testing, pilot testing, and evaluation.

Phase I: Needs Analysis

During the first phase of the project, the team worked to define a common set of goals and needs for ePortfolios, and explored platform options, with the short-term goal of pilot testing one or two options before full, university-wide implementation would be considered. Given the diverse membership in the group, it was possible that after exploration one platform would not emerge as a clear "winner." Consistent with the work of Lorenzo and Ittelson (2005b) and Housego and Parker (2009), the group identified a wide range of current and future uses and therefore could identify the specific requirements for the ePortfolio platform across the campus (see Table 1). Given the diversity of needs and the potential that one platform might not meet all of these needs, each committee member was then asked to prioritize the specific functions each required in an ePortfolio platform.

Phase II: Selecting a Platform for Pilot Testing

Based on these identified needs and priorities and a review of available platforms, five ePortfolio solutions were chosen for in-depth analysis: Desire2Learn, PebblePad, Digication, Pathbrite, and TaskStream. Each of these vendors was invited to demonstrate the features and functionality of their platform to the

Table 1
Campus-Wide Goals and Objectives for ePortfolio Use

Goals and objectives of ePortfolios	Programs and units
Support student reflection throughout their degree programs and other learning experiences to help students make sense of their learning	Center for Student Engagement, Doctor of Physical Therapy, English Department, Human Service and Social Justice Program, Masters of Science in Nursing, Medical Education, Milken Institute School of Public Health Executive MHA Program, College of Professional Studies
Help students link academic work with their experiences outside the classroom	Center for Career Services, Doctor of Physical Therapy, Human Services and Social Justice Program, Masters of Science in Nursing, College of Professional Studies, Milken Institute School of Public Health Executive MHA Program
Track student learning across course sequences, in face-to-face and online programs	College of Professional Studies, Doctor of Physical Therapy, English Department, Human Services and Social Justice Program, Masters of Science in Nursing, Milken Institute School of Public Health Executive MHA Program
Demonstrate and capture program outcomes and competencies to support accreditation and broader assessment activities	College of Professional Studies, Doctor of Physical Therapy, Human Services and Social Justice Program, Masters of Science in Nursing, Milken Institute School of Public Health Executive MHA Program
Enhance Career Planning, Advisement, and Development	Center for Career Services, College of Professional Studies, English Department, Center for Student Engagement
Provide students with a platform to publish work creatively for potential employers and other audiences	Center for Career Services, Center for Student Engagement, Doctor of Physical Therapy, English Department
Provide faculty with a platform to curate materials for teaching dossiers	Future Potential
Foster alumni connections with GW beyond graduation as well as the development of lifelong learners	Future Potential

committee. The committee began the selection process by using criterion-weighting software called Comparion that enabled members to weight the importance of different features and functions and to evaluate the platforms anonymously. The committee then developed a more detailed set of criteria and questions that were provided to each vendor in advance of the demonstrations. Appendix A provides a synthesis of these criteria in a checklist that was used to guide ePortfolio vendor selection.

Phase III: Usability Testing

Following the vendor demonstrations, the committee selected three platforms that best met the criteria for further exploration: Digication, PebblePad and PathBrite. To further assess the end-user experience, the committee decided to conduct hands-on usability testing. The committee recruited undergraduate and graduate students from different schools, departments, and degree-levels to participate. A total of 25 students participated in the testing. Students were assigned to different groups with each group testing a different ePortfolio platform.

Over a 30-minute testing period in a campus computer lab, the students were asked to perform a series of 11 basic web publishing tasks using the same set of pre-made web content (i.e., documents, images, and video). These tasks included: creating and editing the structure of a basic portfolio, uploading and managing files, inserting and manipulating images and video, and adding and formatting text-based content. If needed, students were given basic help documentation for each portfolio platform. Three members of the committee also collected student feedback as it arose organically during the testing session. Students were also asked to evaluate and discuss briefly a fellow student's newly created portfolio and the process they both engaged in to create that portfolio. At the conclusion of the 30-minute test period, students were asked to complete a brief survey to self-report their experiences with the ePortfolio platform in terms of usability, satisfaction, and perceived utility. A summary of the usability questions and results is presented in Table 2.

The 25 students who completed the usability testing also participated in a follow-up focus group discussion. The qualitative comments from the focus group were highly beneficial in revealing issues and concerns not apparent from the usability surveys and which the committee had not previously considered. For example, the tool that was reported as easiest to use

Table 2
Summary of Usability Testing Survey Questions and Results

Questions	Results		
	Digication (n = 10)	Pathbrite (n = 9)	Pebblepad (n = 6)
Do you consider yourself not skilled at all or very skilled at using technology? (1 = *not skilled* to 5 = *very skilled*)	3.7	3.8	4.0
Overall, how difficult/easy was it to use this e-Portolio program? (1 = *very difficult* to 5 = *very easy*)	3.2	3.4	3.0
How difficult/easy was it to add media files (photos, videos, audio) to the ePortfolio? (1 = *very difficult* to 5 = *very easy*)	3.7	4.8	3.2
Would using this ePortfolio discourage or motivate you from completing an ePortfolio project? (1 = *highly discourage* to 5 = *highly motivate*)	2.6	3.7	4.2
How likely is it that you would want to show an ePortfolio made with this program to potential employers? (1 = *very unlikely* to 5 = *very likely*)	1.9	3.2	3.2

was seen as too simple for long-term use within academic programs. Although not one of the platforms was favored by a clear majority of the participants in the focus group, 92% completed the usability test protocol with little to no assistance, 70% recommended we pursue using ePortfolios, and 50% indicated they would use the ePortfolio in their job search. The 92% student completion rate of the usability testing protocol for all three ePortfolio products was an important discovery, as it alleviated committee concerns about student technology skills related to basic web publishing and file management. The high completion rate, combined with generally high student satisfaction scores for all three products, also indicated to the committee that any of these ePortfolio solutions would be both usable and useful for this university's diverse curricular and co-curricular needs across its undergraduate, graduate and professional programs.

Phase IV: Pilot Testing

Based on the results of the usability testing, the qualitative comments from the focus group discussion, and ongoing discussion among committee members, the group selected the Digication platform for pilot testing. In the committee's opinion, despite slightly lower scores on the usability testing, Digication's overall feature set most closely aligned with the collective needs of the academic and administrative departments participating in the pilot.

With an established working group in place representing different units from across the school, and the results of a comprehensive needs analysis, the committee was well poised to take advantage of an internal grant opportunity from the Office of the Provost intended to fund inter-professional and inter-disciplinary collaboration and innovation, one of the pillars of the newly developed University Strategic Plan. The strategic plan also focuses on the development of leaders and global citizens and development of reflective practice. The ePortfolio initiative was positioned to support these pillars of the strategic plan as well, as this complex construct would likely be achieved through curricular and co-curricular activities, which are more easily captured using a pedagogical tool such as an ePortfolio, in which students can document their development through a reflective process. The committee was aware of the Provost's academic interest in ePortfolios and the interest of those who were responsible for developing the leadership, global citizenship, and reflective practice pillars of the strategic plan in identifying a tool to assist in documenting student engagement with these activities. All of these interests added further support to the committee's request and likely contributed to the funding being awarded.

As a result of this grant opportunity, the committee was able to support a much larger pilot test than was originally planned. The funding enabled the committee to guarantee funding for 1,000 seats for one year and to guarantee that all students participating in the pilot could keep their ePortfolios for the duration of their enrollment at the university. The grant also provided additional funding for the vendor to provide onsite training to the ePortfolio administrators, faculty, and students. Also included in the grant funding was support for the committee to undertake outreach activities to promote the pilot to others in the

university community, including a planned ePortfolio showcase day.

The committee has begun a pilot test of the Digication ePortfolio platform, with each school and department implementing it in a different way to assess its capabilities related to the diverse needs of the group. The pilot test began in September 2014 and will run through July 2015. A description of each of the ePortfolio pilot projects follows:

- Masters of Science in Nursing students are creating a capstone ePortfolio comprised of multiple assignments and other professional works completed throughout their program, documenting evidence of their learning related to essential competencies defined by the American Association of Colleges of Nursing for graduate level nursing education.
- The English Department is using the pilot to fulfill a departmental requirement that all undergraduate majors create an ePortfolio to graduate. The ePortfolio is being integrated into faculty advising sessions with junior and senior students to help them document and explain the value of the English major.
- Doctor of Physical Therapy students are evaluating the new ePortfolio platform as a means for improving the student experience with reflection across the 3-year curriculum. Students reflect on curricular and co-curricular activities that support the development of their professional identities. Since the ePortfolio was framed around the program mission, ePortfolios from graduating students can be used to document the program's achievement of its mission for accreditation purposes. Students upload a variety of artifacts including papers, presentations, videos of simulated patient interactions and community service activities relevant to their professional development.
- The Milken Institute School of Public Health is integrating ePortfolios and reflective practice into a competency based hybrid Executive Master's program in Health Administration (MHA). The portfolio will serve as a record of program competency attainments over the program's duration and as a location to house research, data and other evidence relating to a year-long health systems quality and performance improvement capstone project.
- The School of Medicine and Health Sciences MD Programs is evaluating the ePortfolio to support its new curriculum, which places greater emphasis on professional development and reflective medical practice.
- The College of Professional Studies is exploring the ePortfolio as a tool for tracking core competencies, for use as a career-advising tool, and for providing students with opportunities to reflect on the professional skills they had acquired. The school has not used ePortfolios previously and is determining whether their use should become a permanent part of each individual program's curriculum.
- The Center for Student Engagement is using the ePortfolio to enable undergraduate student Resident Advisors to market their skills and involvement efforts to potential employers and to reflect on their experiences working in the residence halls. Graduate Residence Directors will have the opportunity to integrate across the two levels of staffing and document the crisis management, mentoring, and student support model.
- The Center for Career Services is using the ePortfolio to capture and blend learning from co-curricular and curricular experiences to highlight undergraduate students' skills and accomplishments for potential employers. Their activities focus on integrating ePortfolios into two sections of a career management course for undergraduate students studying international affairs.
- The Human Services and Social Justice Program is using ePortfolios with undergraduate students enrolled in two required courses in the program. In the first course, students are using ePortfolios to document and reflect on the planning and execution of a university-wide Hunger and Homelessness Awareness Week. In the second course, senior-level students will be using ePortfolios to curate and reflect on their work from across the courses in the program to demonstrate their learning and personal growth. The implementation in the second course will replace a paper-based portfolio that has been a requirement for several years.

Phase V: Evaluation

While each implementation is somewhat unique, reflecting the distinct motivations and needs of each program, the group identified common themes for evaluation, which include those identified in Table 1, as well as determining if the selected platform is an appropriate long-term solution that the university should sponsor. In addition, the committee wanted to evaluate whether the process encourages faculty and staff to work across programs and disciplines to use ePortfolios to support student success before and after graduation.

To evaluate the pilot and provide evidence to leadership for decision-making regarding long-term adoption, the committee decided to develop student and faculty/administrator surveys administered before and after using the Digication platform. Because of the diverse user groups participating in the pilot, developing a survey that made sense in each context was challenging. However, it was important from an evaluation standpoint to agree upon a common set of questions. Through extensive discussion and revision, the committee was successful in developing common surveys, with the recognition that some questions would not be applicable to all participants.

The student surveys (Appendix B) are designed to gather data related to degree level/status; academic or co-curricular program; reflection on coursework and co-curricular activities with and without a portfolio; current practices for storing coursework and co-curricular products and reviewing those products across a curriculum or program; and plans for showcasing academic or professional work to potential employers or others via ePortfolio, other web-based tools (e.g., social media), e-mail, or in-person. The faculty/administrator surveys are designed to gather data related to the academic or co-curricular program in which they teach or work; previous use of ePortfolios; means of providing students with feedback on their work; methods within courses for student reflection on feedback; satisfaction with current mechanisms for student reflection; current practices for storing student work products and satisfaction with those processes; and opinions related to the ability of students and faculty or administrators to monitor students' learning and progress throughout their programs. The post-pilot surveys for both faculty/administrators and students also gather data related to the ease of use of the platform and satisfaction with the ePortfolio end products, along with general opinions and comments.

Once the pilot is completed, the committee plans to summarize the results and compile recommendations for the university leadership. If the evaluations support the adoption of the Digication platform, the goal is to request funding for an institution-wide adoption that can be included in the 2015-2016 fiscal year budget.

Outcomes

Within a 6-month time frame the committee, representing a diverse group of institutional stakeholders with a wide range of needs, successfully developed a shared vision, and launched the Digication ePortfolio platform in eight academic and student service units across the university. A total of 555 students and 141 faculty and administrators have established accounts with Digication and currently are participating in the pilot project. Additional students, faculty, and administrators are expected to establish accounts as the pilot continues. Student and faculty/administrator surveys have been administered to all participants in advance of using the ePortfolio tool. Students and faculty/administrators will complete the surveys again at the end of the pilot test. Results will be analyzed, along with general feedback from the committee members and pilot participants, to provide evidence for decision-making about long-term implementation of the Digication platform at the institution level.

An equally important, if not more important outcome of this five-phase process has been the emergence of an interdisciplinary community of learners from across the university, committed to ongoing learning and assessment related to ePortfolios. Committee members have demonstrated a commitment to the process by sharing their own knowledge and skills and learning from the knowledge and skills of peers. Collectively, each group member broadened his or her understanding of the range of uses for ePortfolios, of how to effectively design and implement ePortfolios, and of strategies for facilitating reflection. In addition, they worked together and have supported each other in addressing some of the typical challenges noted in the literature, such as technology and less than supportive colleagues (Housego & Parker, 2009). The committee has also worked together to address administrative and educational issues, such as academic integrity considerations and enhancing integration with career services and assessment activities.

This community of learners is comprised of the champions and early adopters of ePortfolios, which, as noted by Rogers (2003), will be critical to the potential long-term, campus-wide adoption of ePortfolios at the institution. As early adopters and champions, this community of learners has plans for future educational seminars where the vision of the group can be communicated and completed ePortfolios can be showcased as models for other students, faculty, and staff and local successes celebrated with the larger community (Kotter, 1995). Having a single platform for all ePortfolio users at the university will also streamline and centralize the faculty development process essential to the successful adoption of ePortfolios across the campus.

Discussion

In this digital age, ePortfolios are becoming an increasingly more important component of any university's academic toolkit. There are many ePortfolio platforms available, each with a unique set of features and functions to support different educational needs. Different platforms have different strengths: some have more robust assessment capabilities, while

others provide a better user experience. It is also apparent that all of the platforms are evolving and working to improve their suite of features and functions on an ongoing basis.

Through the five-phase process that has been described, we identified a broad range of user needs based on different purposes for implementing ePortfolios, which were consistent with the findings of Lorenzo and Ittelson (2005b) and Housego and Parker (2009). The goals and purposes identified for implementing the use of ePortfolios helped to guide which platform to use. This enabled the committee to allow the learning objectives to be the driver for the technology decision, which is not always the case in university-wide initiatives.

The selection of the Digication platform for the ePortfolio initiative described in this paper was based on its flexibility to meet the diverse needs of students, faculty, and administrators at both the strategic and operational levels (Balaban et al., 2011). While all three of the platforms selected for usability testing had unique strengths, Digication was chosen for its capacity to support creativity in the ePortfolio creation process; its robust assessment features and the ability to link ePortfolios to competencies for accreditation purposes; the ability for faculty to capture a moment in time for each portfolio; the ability for alumni to keep and continue to curate their ePortfolios after graduation; and excellent technical support. Notably, the support and responsiveness of the vendor at the technical level during the evaluation process was a critical decision-making factor.

As academic institutions move from course, department, or program level ePortfolio implementations to full scale, institution-wide initiatives, it is essential to take a systems approach to exploring, evaluating, and ultimately implementing a solution that fully meets the needs of diverse stakeholders. Considering all stakeholders and all three levels of implementation (strategic, technical, and operational) is critical to the ultimate success of implementation (Balaban et al., 2011). The committee addressed the strategic level by creating an ad hoc interdisciplinary group to develop a shared vision and innovative approach to implementing ePortfolio use across the university and effectively communicating the potential use of ePortfolios in capturing complex constructs of the strategic plan, including interdisciplinary innovation and the development of leadership and global citizenship. The committee also addressed the technical level by selecting an ePortfolio solution with significant technical support available and by becoming a community of learners that both supports and learns from each other to optimize the use of effective ePortfolio pedagogies. The committee is planning campus-wide education sessions during which early successes of ePortfolio use can be communicated to the broader community. Finally, the committee addressed the operational level by selecting the ePortfolio solution that best meets the needs of the diverse community. In addition, the committee began to address some of the challenges often encountered with ePortfolio and other change initiatives, namely, developing a shared vision, identifying the benefits of using the new portfolio solution, developing a coordinated strategy for implementation and communication, and integrating technology (Kotter, 1995; Reese & Levy, 2009).

This paper presents a model of how one university sought to meet the ePortfolio needs of its community, both curricular and co-curricular. Using a five-phase process, goals and objectives for portfolio usage across the university were identified; the platform that most effectively met the diverse needs of its community was selected; and a pilot test was implemented across eight units within the university. The results of this pilot test will inform decision-making related to long-term, institution-wide adoption of the Digication ePortfolio platform. Simultaneously, a shared vision was developed and communicated, organizational support was obtained, and short-term successes were amassed as committee members learned from each other – each of which is critical for successful implementation of any sustainable change (Gesme & Wiseman, 2010; Kotter, 1995)

Issues yet to be fully addressed by the committee include those raised by Lorenzo and Ittelson (2005b), including ongoing support and scalability, security and privacy, ownership and intellectual property, assessment, adoption, and long-term maintenance. In addition, limitations to this study should be noted. This is a case study of one university's experience, and the data represent the preliminary results of a pilot test and cannot be generalized.

Conclusions

Grass roots technology initiatives like the one presented in this paper can positively impact the broader university mission in many ways. Through this effort, academic and student service units with diverse needs came together and identified commonalities to successfully launch an important campus-wide initiative. Funding support from university leadership, a centralized development process organized through the University Teaching and Learning Center and Division of Student Affairs, and commitment from diverse members representative of the broader university community have enabled a robust implementation and evaluation process of a single technology platform that will hopefully meet the long-term needs of this very diverse community. Moreover, the committee has

evolved into a learning community that has enhanced the knowledge and technical skills of its members. By bringing this expertise and information back to their home units through the pilot project, these early adopter ePortfolio champions have planted the seeds for a significant and sustainable educational innovation.

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Appendix A
Criteria for ePortfolio Vendor Selection

Category	Criteria
Design & Development Features & Ease of Use	❑ Overall ease of use in creating an e-Porfolio. ❑ Ease of uploading written work. & other file types. ❑ Supported file types (video, multimedia, office, etc.). ❑ How externally created, text based content (Word, PDF, etc.), is displayed; readability of on-screen written work. ❑ Viewing and commenting features. ❑ Image editing/cropping/resizing features. ❑ File size limits for artifacts. ❑ Integration with online content hosting sites (e.g., YouTube, ScreenCast, Vimeo, Social Media Sites, etc.). ❑ Ability to write and create content/artifacts from within the ePortfolio (text editing, formatting; audio or video recording).
Managing, Curating & Retaining Access	❑ Ability for student to create and keep multiple versions. ❑ Ability for department or institution to keep time-stamped versions. ❑ Student access and maintenance of portfolios after graduation (cost, size limits, updatability, time limit). ❑ Institution access to alumni portfolios. ❑ Archive features.
Privacy Settings, Sharing & Portfolio Views	❑ Student control of public access. ❑ Ability to lock down/hide sections or individual artifacts. ❑ Ability to customize views for different audiences (e.g. instructors, institution administrators, other students, employers). ❑ Ability to work privately and hide content from all parties, including instructor. ❑ Web 1.0 and 2.0 sharing of portfolios. ❑ Internal/public commenting features & controls. ❑ Collaborative editing features.
Writing-Focused Features	❑ Writing/editing features. ❑ Instructor & peer feedback features. ❑ In-line editing features. ❑ Ability to keep multiple versions of writing assignment including instructor feedback & revisions. ❑ Ability for multiple instructors to comment on the same piece of writing. ❑ Depth/sophistication of content authoring and instructor feedback mechanics.
Instructor Features: Assessment & Collaboration	❑ Instructor commenting & feedback on externally created artifacts (written document mark-up; commenting on other artifact types). ❑ Portfolio & assignment templates. ❑ Assignment creation & monitoring. ❑ Ability for multiple instructors to comment on the same artifact. ❑ Artifact versioning features, including instructor access to versions. ❑ Batch loading of assessment data (e.g., exam scores) into individual portfolios. ❑ Program-level/multi-year portfolio capabilities & student access features. ❑ Competency tracking features.
Systems Integration	❑ Student account creation & authentication features ❑ Integration with enterprise systems (e.g. Banner) ❑ Integration with LMS (e.g., Blackboard) & grade center. ❑ Student access mechanisms (within and/or outside of courses). ❑ Well-developed APIs. ❑ Integration with LMS Grade Center. ❑ How does your system integrate with the Grade Center in Bb? ❑ Portability among LMSs in case of transition. ❑ Content export functionality (e.g., direct download, export to PDF, etc.)

	❑ IOS friendly.
Accessibility of Portfolio System & Artifacts	❑ Accessibility of the portfolio's UI. ❑ Accessibility of user created content in the portfolio. ❑ Accessibility of artifacts in the portfolio. ❑ Adherence to accessibility standards.
Accreditation	❑ Features to support evidence of student achievement for accreditation. ❑ Ability to create customized reports based on variables (e.g., grades, competencies met, instructor comments, time spent, tagged artifact type). ❑ Ability to export complete ePortfolios and components of ePortfolios for accreditor to review. ❑ Ability to export all student instances of a single assignment. ❑ Competency tagging features. ❑ Support for long-term archives.
Support	❑ Technical support for students. ❑ Technical support for instructors. ❑ "Live support" (e.g., online, on-site, phone). ❑ "Self-help" (documentation, videos, blogs, chats, etc.). ❑ Dedicated "shared space" for portfolio templates, advice, model portfolios, etc. (for use by administrators). ❑ Integration of ePortfolio support with other institutional technology support.
End Product/ Public Facing e-Porfolio	❑ Diverse examples of successful "finished portfolios" created product (e.g., undergraduate, graduate, leadership, career development). ❑ Aesthetics: examples of great visual design with the product. ❑ Navigability: examples of great user experience designed with the product. ❑ Ability for institutions to "curate" portfolios for viewing by prospective students, faculty and the general public.

Appendix B
Student Survey

Included on Pre- and Post-Surveys:

1. I am a . . .
   - ❑ New graduate student at GW
   - ❑ Continuing graduate student at GW (degree or certificate program)
   - ❑ Nondegree seeking student
   - ❑ Freshman at GW
   - ❑ Continuing undergraduate student at GW

Please rate your level of agreement or disagreement with each of the following statements pertaining to how you received feedback on work you completed for the program or course for which the ePortfolio has been used.

2. In this program, I frequently receive written comments from my instructors/advisers/program staff.
   - ❑ Strongly Disagree
   - ❑ Disagree
   - ❑ Neither Disagree or Agree
   - ❑ Agree
   - ❑ Strongly Agree

3. I think that the feedback I receive is very helpful.
   - ❑ Strongly Disagree
   - ❑ Disagree
   - ❑ Neither Disagree or Agree
   - ❑ Agree
   - ❑ Strongly Agree

4. I usually take time to review the written comments I receive.
   - ❑ Strongly Disagree
   - ❑ Disagree
   - ❑ Neither Disagree or Agree
   - ❑ Agree
   - ❑ Strongly Agree

5. I think the feedback/comments I receive are helpful.
   - ❑ Strongly Disagree
   - ❑ Disagree
   - ❑ Neither Disagree or Agree
   - ❑ Agree
   - ❑ Strongly Agree

6. On average, how long did you spend reviewing written feedback you receive on an assignment or project for the program for which you will be using ePortfolios (excluding automatically graded/Scantron tests)?

7. In 2013-14, did you track your learning progress across all classes and semesters in your program of study?
   - ❑ Yes
   - ❑ No
   - ❑ I don't track my program

8. How did you track your learning progress across all classes and semesters in your program?

9. How satisfied are you with your method for tracking your progress across your

program of study?

- ❑ Very Dissatisfied
- ❑ Dissatisfied
- ❑ Not Satisfied or Dissatisfied
- ❑ Satisfied
- ❑ Very Satisfied

10. Do you ever look back at work you produced in previous courses and reflect on your growth or how you have changed?

- ❑ Yes
- ❑ No

11. Regardless of how you answered the previous question, do you think it can be helpful to look back at work you produced in previous courses?

- ❑ Yes
- ❑ No

12. I think that using an ePortfolio makes it easier for me to reflect on and make sense of my own learning.

13. What is the most common way you store the work you produce for courses/programs in which you have participated, once the course/program is completed?

- ❑ Paper Files
- ❑ Files on my computer
- ❑ GW Google Drive
- ❑ Other cloud storage that GW does not provide
- ❑ ePortfolio system – Digication
- ❑ ePorfolio system – other (e.g., Blackboard)
- ❑ I don't keep work once a course is finished
- ❑ Other

14. Do you anticipate sharing your academic or professional work with other potential employers of other educational programs

- ❑ Yes
- ❑ No
- ❑ Don't Know

15. I anticipate sharing my work with other via the following vehicles (Select all that apply)

- ❑ By e-mail
- ❑ LinkedIn
- ❑ Facebook
- ❑ Personal website or blog
- ❑ ePortfolio
- ❑ Hard copy portfolio
- ❑ In-person presentation or interview
- ❑ Other

16. Provide any additional comments related to this survey.

17. Please indicate the GW program in which you participate.

Additional Post-Survey Questions:

18. Please rate your level of agreement or disagreement with each of the following statements pertaining to Digication (5 Pt Scale = Strongly Disagree to Strongly Agree)

- ❑ I found the Digication system easy to use overall.
- ❑ I needed significant assistance at the start in order to begin using the Digication system.
- ❑ I think students would learn to use the Digication system very quickly.
- ❑ I received technical support from Digication when I needed it while using the platform (example: Trouble shooting how to access Digication when the system went down).
- ❑ I think Digication is a usefultool for students.
- ❑ I found it easy to format text content in the Digication system.
- ❑ I found it easy to integrate multimedia into the Digication system.
- ❑ I was satisfied with the look and feel of the ePortfolio I created.
- ❑ The Digication system will be useful for tracking my learning and achievements across a program or course.
- ❑ I would recommend the Digication platform to others.

Besides being a repository for your work in your course or program, what else did youdo with your ePortfolio this past semester? (Select all that apply)

- ❑ Received feedback from instructors
- ❑ Tracked my own progress across my program of study
- ❑ Maintained all of my course work in one place
- ❑ Shared with fellow classmates
- ❑ Shared with potential internship supervisors
- ❑ Shared with potential employers
- ❑ Shared with graduate schools as part of an application for further study
- ❑ Other (please specify)

Had you previously used another ePortfolio tool?
- ❑ Yes
- ❑ No

If yes, what is your preference?
- ❑ No preference – they are about the same
- ❑ I prefer Digication
- ❑ I prefer the other ePortfolio tool (please name)

<u>Faculty/Administrator Survey</u>

Pre-survey Questions:

1. Did you/your program use ePortfolios in the previous (2013-2014) academic year?
- ❑ Yes
- ❑ No

2. Did you use the ePortfolio to (select all that apply):
- ❑ Provide feedback on student coursework
- ❑ Track student performance
- ❑ Store student work
- ❑ Facilitate student reflection
- ❑ Document achievement for accreditation purposes

3. What platform did you use for your ePortfolio during AY 2013/2014
- ❑ Blackboard
- ❑ Tasktream
- ❑ Digication

- ❑ Other (Please specify)

4. To what degree were you satisfied with the functionality of that ePortfolio system?
- ❑ Very Dissatisfied
- ❑ Dissatisfied
- ❑ Not Satisfied or Dissatisfied
- ❑ Satisfied
- ❑ Very Satisfied

5. Typically, how do you provide feedback on student assignments or projects
(excluding electronically graded or Scantron tests)? Please rank from 1 6,
1 being the most common and 6 the least. Use the "NA" option for any method of feedback you do not use with any regularity.

- ❑ Handwritten comments
- ❑ Electronic comments (e.g., via MS Word)
- ❑ Comments through Blackboard gradebook
- ❑ Written comments through an ePortfolio system
- ❑ Verbally via an individual student meeting
- ❑ Verbally in class
- ❑ Other

6. Do you have a method embedded in your course that allows your students to reflect on the feedback you give them?
- ❑ Yes
- ❑ No

7. If you answered “Yes” above please explain how here.

8. Overall, I was satisfied that students were able to reflect on and make sense of what they were learning on their own, without specific feedback from faculty.
- ❑ Very Dissatisfied
- ❑ Dissatisfied
- ❑ Not Satisfied or Dissatisfied
- ❑ Satisfied
- ❑ Very Satisfied

9. Typically, what is the main way you store work or projects that students complete for your course?
- ❑ Paper files
- ❑ Files on my computer
- ❑ GW Google Drive
- ❑ Other cloud storage that GW does not provide
- ❑ CD or flash drive
- ❑ Blackboard Gradebook
- ❑ ePortfolio system – other, such as Blackboard
- ❑ I don’t keep my students work, I ask them to store it
- ❑ Other (please specify)

10. Overall, I am satisfied with my method of storing student work.
- ❑ Strongly Disagree
- ❑ Disagree
- ❑ Neither Disagree or Agree
- ❑ Agree
- ❑ Strongly Agree

11. I think that students in my department/program have a good sense of how they are developing in our program.

- ❑ Strongly Disagree
- ❑ Disagree
- ❑ Neither Disagree or Agree
- ❑ Agree
- ❑ Strongly Agree

12. It think that faculty/staff in my department/program have a good sense of what students are learning.

- ❑ Strongly Disagree
- ❑ Disagree
- ❑ Neither Disagree or Agree
- ❑ Agree
- ❑ Strongly Agree

13. Provide any additional comments related to the questions asked in this survey.

Additional Post-Survey Questions

14. Over the duration of the course or program with the ePortfolio, how many hours would you estimate you spent providing feedback on student assignments or projects in fall 2014 (excluding Scantron tests)?

15. Did you have a method embedded in your course that allowed your students to reflect on the feedback you gave them?

- ❑ Yes
- ❑ No

16. If you answered Yes above, please explain how.

17. I feel that reflection is important and there is much to be gained from asking students to look back and reflect on their work across their program of study or project.

- ❑ Strongly Disagree
- ❑ Disagree
- ❑ Neither Disagree or Agree
- ❑ Agree
- ❑ Strongly Agree

18. I believe that using an ePortfolio approach did a particularly good job of encouraging student reflection.

- ❑ Strongly Disagree
- ❑ Disagree
- ❑ Neither Disagree or Agree
- ❑ Agree
- ❑ Strongly Agree

19. Evaluate the Following Statements (Strongly Disagree to Strongly Agree)

- ❑ I found the Digication system easy to use overall
- ❑ I needed significant assistance at the start in order to begin using the DIgication system
- ❑ I think faculty/staff would learn to use the Digication system very quickly
- ❑ I think students would learn to use the Digication system very quickly
- ❑ I received technical support form Digication when I needed it while using the platform
- ❑ I found Digication to be a useful tool for my students
- ❑ I found Digication to be a useful tool for me as a faculty/staff member
- ❑ I found it easy to format text content in the Digication system
- ❑ I found it easy to integrate multi-media into the Digication system
- ❑ I was satisfied with the look and feel of the ePortfolios produced in my courses/programs
- ❑ The Digication system will be useful for tracking student achievement across my program or course

- ❑ The Digication system will be useful for generating reports of student achievement for accreditation and other purposes
- ❑ I would recommend the Digication platform to others

20. Please provide additional comments you have on the Digication System.

21. Had you previously used another ePortfolio tool?
    - ❑ Yes
    - ❑ No

22. If yes, what is your preference?
    - ❑ No preference – they are about the same
    - ❑ I prefer Digication
    - ❑ I prefer the other ePortfolio tool (please name)

Please indicate the GW program in which you work or teach that is using or used an ePortfolio.

Which of the following describes your primary role/job at GW
- ❑ In-person classroom instructor (Faculty)
- ❑ Online instructor (Faculty)
- ❑ Practicum or internship supervisor (Faculty)
- ❑ Practicum or internship supervisor (Staff)
- ❑ Academic advisor (Faculty)
  Program director or coordinator (Faculty)
- ❑ Program director or coordinator (Staff)
- ❑ Staff providing instructional design support for ePortfolio program implementation
- ❑ Other (please specify)

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Reimagining Boundaries: How ePortfolios Enhance Learning for Adult Students

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This article examines the importance of co-curricular activities for student success, reviews literature about narrative identity as it relates to adult students, and describes an ePortfolio project that captures contributions that nontraditional students bring to the classroom. The implications reinforce curriculum design practices and explore possibilities for enhancing the culture of nontraditional programs through improved assessment and a stronger student community.

Many students experience school as their world, and the institutions around them reinforce that paradigm through activities that can encompass many elements of their identity. This often begins in elementary school and, for traditionally-aged students, continues through college through busy class schedules, sports, clubs, and other activities. While they are working toward an undergraduate degree, co-curricular activities enhance student academic success by increasing the richness of that world (Astin, 1993), and for many, by defining the college experience. However, a growing percentage of undergraduates enrolled in universities throughout the United States are not of traditional age (Hess, 2011). For them, academics are important, but school is not the totality of their world in the way that it often is for traditional students, because they are not preparing for an adult world of responsibilities but participating in it. While some claim that colleges are "failing their biggest group of students" (Selim, 2014, p. 1) or ignoring this new majority (Lobertini, 2014), this dynamic and the increasing number of people who are encompassed by it creates an opportunity for universities to adapt both classroom and co-curricular experiences to integrate various types of experiences so that the totality of students' learning can be better understood, assessed, and celebrated.

ePortfolios can facilitate the achievement of this goal. For the nontraditional undergraduate, the world of the learner is not defined by the boundaries of the school's influence; rather, the world itself is recognized as the student's primary learning environment because nontraditional students have lives that are already rich in diverse ways that can intentionally resonate with academic goals. A difference that distinguishes nontraditional from traditionally-aged undergraduate students is that academic goals are commonly not their only priority, for many have full-time jobs, responsibilities to spouses and children, community commitments, military obligations, or a combination of these duties (Peck & Varney, 2009). The process of creating an ePortfolio embraces the concept that such students will bring their whole selves to their university experience, engage in holistic reflection about learning as defined by both classroom and external influences, and share those reflections in ways that build community, thus reinforcing and revealing applied learning outcomes. With this approach, lifelong learning can be nourished, reinforced, and celebrated.

The ePortfolio project that is presented below demonstrates the ways in which creating and sharing ePortfolios in a course setting also enables adult students to build a narrative identity that "refers to an individual's internalized, evolving, and integrative story of the self" (McAdams, 2008, p. 1). Doing so engages the important process of understanding, creating, and articulating individual stories, bridging academic, career, community, and personal journeys into a cohesive whole that gives meaning and integration to the events of their lives. The project also reveals how ePortfolios allow students to share those reflections in ways that build community and thus reinforce applied learning outcomes.

Defining Non-Traditional Students

Often called evening, accelerated, intensive, adult, or non-traditional students, the over-24-year-old student now represents a majority among college students in the United States (Hess, 2011). Of the 17.6 million undergraduates enrolled in colleges and universities in the United States, just 15% of them fit the image of a traditional college student who attends a 4-year college and lives on campus (Hess, 2011). Hess (2011) identified this "significant shift . . . [as a] massive growth in the adult student population in higher education" (p. 1) because "38% of those enrolled in higher education are over the age of 25 and one-fourth are over the age of 30." Hess (2011) added that "the share of all students who are over age 25 is projected to increase another 23%" (p. 1) in the next 5 years, projecting a future in which meeting the needs of adult students will have increasing importance.

This population defies definition in ways beyond age, for they represent diversity from every perspective. According to university officials at the campus that

introduced the portfolio project that is the subject of this article (J. Murray, personal communication, June 11, 2014), the approximately 300 students who compose the undergraduate adult population are as young as 25, the oldest graduate to date is 81, and the average age is about 40. They are an ethnically and racially diverse group in which women slightly outnumber men. They are first-generation students, entrepreneurs, mid-career adults hoping to bolster promotional choices, former teen mothers, retirees finishing a long-held goal, working adults aiming for a career change, and community college attendees who were late in navigating the transfer process. Very often, they are a combination of many of the above, and that dynamic brings them to the classroom eager, motivated, and informed by a wealth of experiences that strengthen the learning environment.

"Nontraditional" is an increasingly inept way to describe this population, given their status as a new majority on campus. It is, however, the term most commonly understood for this population and will accordingly be used throughout this text.

Importance of the Co-Curricular

Supporting all students requires a multi-faceted approach to ensure that the learning environment is challenging, rich in diverse experiences, capable of resonating with different types of learners, and relevant to learning goals (Elias & Drea, 2012). For traditional students, this is accomplished through a combination of curriculum and campus-sponsored co-curricular activities. Classroom learning is enhanced by activities that may include music, art, sports, student government, civic involvement, service learning, and hobbies. Often, these include leadership opportunities and expose students to practical learning applications so that they are prepared for an adult world of family, career, and community responsibilities (Tenhouse, 2014).

The value of activities that go beyond the classroom was revealed in a 2011 study at one university, which indicated that, even factoring in various controls, students engaged in co-curricular activities earned higher grade point averages than students overall (Zehner, 2011), which affirms that academic success is linked to relevant activity outside of the classroom. An example of this is a study by Eyler and Giles (1999) defining service learning as one type of co-curricular activity, which revealed that (a) students remember learning better through experience and through applying the material that they learn to actual situations, and (b) such learning provides a deeper understanding of the subject matter, including the complexity of social issues. This supports research that affirms that co-curricular involvement has a positive effect on student learning and development (e.g., Astin, 1993).

Elias and Drea (2013) referenced the "decades of research [that] have highlighted the intrinsic value in co-curricular engagement" (p. 2) and pointed out that "rather than being an means to an end, education can be the journey that will help define that end . . . [because] the reality of today's economy is that many people will have multiple careers" (p. 2), which suggests that the focus on undergraduate education should be on the development of the self and not simply job preparation. Astin (1999) summed up his own conclusions about the value of the co-curricular, defining student involvement as

> the quantity and quality of the physical and psychological energy that students invest in the college experience. Such involvement takes many forms, such as absorption in academic work, participation in extracurricular activities, and interaction with faculty and other institutional personnel. According to the theory, the greater the student's involvement in college, the greater will be the amount of student learning and personal development. (pp. 528-529)

As a result of research supporting its value, many universities invest much time and resources in co-curricular activities, acknowledging that in order to assess learning adequately, "every aspect of student life must be examined, and a new configuration of learning processes and outcomes created" (Keeling, 2004, p. 10). However, campus co-curricular activities are less commonly available to or accessed by nontraditional students, according to Peck and Varney (2009), who noted that university-sponsored co-curricular activities tend to be oriented toward younger students in scope and schedule. Elias and Drea (2013) affirmed the difficulty of including nontraditional students in activities typically understood as co-curricular, noting that "a bulk of the co-curricular programming [is] offered at times when nonresident students have more challenges becoming involved, which leaves them often unable to participate in these opportunities" (p. 2).

However, the key challenge goes beyond scheduling. Often, nontraditional undergraduates hesitate to take on even the obligations associated with academic commitments because they know that completing class time and homework obligations constitutes a challenge in lives already busy with work, family, and community responsibilities (Viana, 2011, p. 1). Adding campus co-curricular activities would add an untenable burden and an unnecessary one, given the motivation that nontraditional students have and the circumstances in which they engage with their learning experiences.

Thus, strong research supports the conclusion that learning opportunities occur outside of the classroom and that a variety of these are essential for a rich learning experience. However, nontraditional students find themselves mostly unable to participate in institutional opportunities for co-curricular learning. Given this construct, it becomes increasingly important to reimagine the boundaries of what is defined as co-curricular and therefore captured, assessed, and celebrated as part of the undergraduate college experience. As presented below, ePortfolios have the capacity to bridge the gulf between the value of a traditional college experience and the totality of the learning experienced by nontraditional students; doing so requires a capacity for reflection about narrative identity and storytelling, which are essential for creating the shared community of experience that is essential to reinforcing learning outcomes.

Narrative Identity and Storytelling

This look at some of the literature related to storytelling and narrative identity reinforces the philosophical foundation of the narrative that students create about their academic and co-curricular activities through their ePortfolios. The process of reflection, of creating narrative identity, and of sharing the stories of who they are in a social context contains immense value in terms of capturing, celebrating, assessing, and enhancing learning. Nontraditional students often draw from a rich repertoire of experiences that provide meaning to their stories and relevance to their learning outcomes. Storytelling through the construction of an ePortfolio can aid reflection by looking holistically at the various elements that compose learning, helping both to enhance meaning and to better imagine future possibilities.

There is a depth of literature related to storytelling, both contemporary and ancient. Turner (1996) suggested that stories are "our chief way of looking into the future, of predicting, or planning, and of explaining" (p. 5). This is both explained and emphasized through philosophic tradition, for, as Anselm Ramelow explained (personal communication, November 23, 2006), Aristotle and Aquinas together looked at language as a tripartite structure (word, mind, and object), showing that "experiences cannot be separated from language." This is further affirmed through a biological consideration of human understanding, for "every reflection . . . invariably takes place in language, which is our distinctive way of being and being humanly active" (Maturana & Varela, 1987, p. 26).

Stories are designed to communicate and entertain, to provide meaning and incite the imagination about future possibilities, and to "provide symbolic solutions to contradictions" (Kearney, 2002, p. 6):

> From the word go, stories were invented to fill the gaping hope within us, to assuage our fear and dread, to try to give answers to the great unanswerable questions of existence . . . Great tales and legends gave not only relief from everyday darkness but also pleasure and enchantment: the power to bring a hush to a room, a catch to the breath, a leap to the curious heart, with the simple words, "Once upon a time." (Kearney, 2002, pp. 6-7)

Even when they begin them less dramatically, nontraditional students often have complex, intriguing, and poignant stories of career and personal development that explain the choices that led them away from what is considered a traditional college and career track. Their family, community, and career choices create a rich co-curricular experience that helps to inform these stories while bringing meaning to the students' experiences. Lewin and Birute (2001) echoed Kearney (2002) in a way that particularly resonates with the use of ePortfolios for nontraditional students, stating that "narratives can contain the complexity of people's experience, can provide a vehicle for readers to connect with their passion, to their struggles" (p. 13).

The concept of narrative identity is further relevant to andragogy in practice. Knowles, Holton, and Swanson (2012) defined "core adult learning principles" (p. 4) as (a) the learners' need to know the why, what, and how; (b) the self-concept of the learner as autonomous and self-directing; (c) the prior experience of the learning, which provides a resource and mental models; d) the learner's readiness to learn, which is both life-related and developmental; e) the learner's orientation to learning as problem-centered and contextual; and f) the learner's motivation to learn as something having intrinsic value or providing a personal payoff.

This connection is particularly important in the creation of an ePortfolio, which aims to create a text that represents a student's identity in way that allows others to connect with their passion and struggles. So often when students present their portfolios, the stories that they tell of the many co-curricular activities that have contributed to their learning offer cohesion to the fragmented reflections offered anecdotally in class discussions. Their stories include reflection about the relevance of their learning to their experiences, which is particularly important in the context of Knowles et al.'s (2012) definition of learning as "a process by which behavior is changed, shaped, or controlled, which includes personal involvement, self-initiation, pervasiveness, evaluation by the learner, and an

essential essence of meaning" (pp. 13-14). Through reflection about learning that occurs both in class and in external environments, the community of instructors and fellow students come to new understandings about the shared world that they inhabit, both within the classroom and in broader community networks. McAdams (2008) said that

> the stories we construct to make sense of our lives are fundamentally about our struggle to reconcile who we imagine we were, are, and might be in our heads and bodies with who we were, are, and might be in the social contexts of family, community, the workplace, ethnicity, gender, social class, and culture writ large. The self comes to terms with society through narrative identity. (p. 1)

In the case of adult learners and ePortfolios, society is revealed in multiple dimensions that include faculty relationships, the university's mission, organizational goals, and community opportunities.

Effective storytellers understand these relationships, "the connections between diverse and seemingly separate disciplines. They must knowhow to link apparently unconnected elements to create something new. And they must become adept at analogy—at seeing one thing in terms of another" (Pink, 2005, p. 130). Students creating ePortfolios reflect on these relationships, creating the story of their identity in the process of creating and sharing the events and evidence that comprise their individual stories. Through this process of connecting relationships, "culture and personality interact in their most intricate and profound ways in the fashioning of narrative identity" (McAdams, 2008, p. 249). Clifford Geertz (1995) spoke earlier in a similar vein, noting that in stories "what we can construct . . . are hindsight accounts of the connectedness of things that seem to have happened: pieced-together patternings, after the act" (p. 2), and in this way, we use the storytelling process to inform meaning. "Narratives draw together disparate and somehow discordant elements to the concordant unity of a plot" (Ricoeur, 1992, p. 142), which allows meaning to evolve and be understood, for "the process of storytelling is one of making connections and therefore of infusing meaning" (Turner 1996, p. 136). The andragogical model of adult learning is based on the following precepts from Knowles et al. (2012) and relate to this process of storytelling within the ePortfolios created by nontraditional students:

> Adults need to know why they need to learn something; adults maintain the concept of responsibility for their own decisions, their own lives; adults enter the educational activity with a greater volume and more varied experiences than do children; adults have a readiness to learn those things that they need to know in order to cope effectively with real-life situations; adults are life-centered in their orientation to learning; and adults are more responsible to internal motivators than external motivators. (p. 70)

Thus, for adult students who invariably have a wealth of interesting experiences that help define them as nontraditional, reflecting, creating, and sharing the meaning that they derive from these experiences is often poignant for both the student presenting and for the others present.

Narrative also calls doe the student who presents the ePortfolio to resonate with authenticity within the story, for "by means of the plot, goals, causes, and chance are brought together within the temporal unity of a whole and complete action" (Ricoeur, 1984, p. ix). Knowles (2012) spoke of designing "a path of learning experiences" (p. 129), and ePortfolios allow students to use the narrative process to reflect on this pattern. While Knowles (2012) discussed the difficulty of evaluation, the ePortfolio creates a canvas for the nontraditional student to contribute his or her own assessment of this necessary evaluation. This evaluation provides "a new congruence in the organization of events" (Ricoeur, 1984, p. ix) that contains relevance for sense-making. The events that inform the rich experiences that constitute the co-curricular world of the nontraditional student often occur in the midst of the chaos of everyday living, and it is only with time and reflection that relevance and meaning can be drawn.

A poignant example of this in the program in which this author works occurs with students who are former teen mothers. The stories told by others about their experiences are often negative, but through reflection about challenging experiences, these now older mothers draw strength from their resilience and capacity to overcome the expectations of others. In many ways, this is a counter-narrative, in which students express resistance to "dominant cultural narratives and give voice to suppressed discourses" (McAdams, 2008, p. 247) and in doing so, begin to reframe the story in a social context that influences others. This has special power not only for former teen mothers but also for other ethnic or racial minority groups, those who are economically disadvantaged, or other marginalized groups of people (McA,dams, 2008).

Stories are also referred to as frames of reference (Keeling, 2004) from which people "compose their own stories about who they are, what life is about, what is going to happen to them and how they should respond to the various challenges life presents" (p. 9). This process of self-authorship is a way to make meaning in

which students reflect on their lives and decide how to appropriate previous choices or behavior in the ongoing narrative of who they are (Keeling, 2004).

Narrative Imagination

Reflection on narrative identity can create a new congruence, which in turn ignites the imagination about new possible futures. The value of the ePortfolio creation thus goes beyond creating meaning out of past events to using that reflection to project future possibilities, which can be relevant in various ways to nontraditional students. Narrative imagination is essential to constructing a story of self in which time, authenticity, and meaning are engaged in discourse about both past and current learning and future possibilities of being. For example, teen moms who had been told that they were ruining their lives through their choices are able to recreate their identities in relation to others as they emerge as college graduates with a repertoire of impressive accomplishments.

This future orientation has deep value for all adult students creating ePortfolios. Knowles (2012) posited that there are four means by which adult experiences affect learning: (a) by creating a wider range of individual differences; (b) by providing a rich resource for learning; (c) by creating biases that can inhibit or shape new learning; and (d) by providing grounding for self-identity. This dynamic of future, past, and present integration of experiences within one story is consistent with the philosophy behind storytelling, which requires "(1) the *prefiguring* of our life-world as it seeks to be told; (2) the *configuring* of the text in the act of telling; and (3) the *refiguring* of our existence as we return from narrative text to action" (Kearney, 2002, p. 133; emphasis in original). This process helps to address Knowles et al.'s (2012) third point about the limitations of existing biases by requiring that students reflect on what can inhibit or shape new learning. Schön (1983) referred to this as a process of reflection-in-action and posited that it is "central to the 'art' by which practitioners sometimes deal well with situations of uncertainty, instability, uniqueness, and value conflict" (p. 50). In the construction of an ePortfolio, the present is experienced within both the context of future expectations and the context of memories, combining to link memory and imagination to ethical action in the present and future and to the relevance of shared understandings. Ricoeur (1976) linked narrative identity with public meaning, explaining that

> My experience cannot directly become your experience . . . Yet, nevertheless, something passes from me to you . . . This something is not the experience as experienced, but its meaning. Here is the miracle. The experience as experienced, as lived, remains private, but its sense, its meaning, becomes public. (p. 16)

The public meaning that students share when they present their ePortfolios informs classroom learning, making relevant both the individual students' co-curricular experiences and the meaning that is shared with other class participants. The University of Maryland's Center for Campus Life (n.d.) cited the "practices of reflection and reciprocity" (para. 9) that tie co-curricular activities to learning, which reinforces the relevance of social reflection about the stories that students tell, and Reed (2001) asserted that reflection has "a profound impact" (p. iii) on students' reflections, especially with regard to whether they perceive their own behavior as leadership. For those nontraditional students who have been long infected by a narrative that defines them in deficit-related terms because they did not finish a degree at a traditional age, this reflection and emergent identity are especially poignant.

By sharing stories with each other, students build community and ignite imagination about the future for themselves and for their classmates. Knowles et al. (2012) referred to this as "making things happen by releasing the energy of others" (p. 261). Storytelling requires "imagination, joyfulness, and social dexterity" (Pink, 2005, p. 58) because effective stories "almost always pack an emotional punch . . . a fact is 'the queen died and the king died.' A story is 'the queen died and the king died of a broken heart'" (p. 101). Indeed, when hearing about co-curricular community, family, and career experiences, students often share emotions that resonate with their classmates. In one class, a student's courage in revealing his identity as a gay man inspired another to share her story of poverty and violence; when she listed the first student alongside world leaders whom she revered as a role model for ethical living, the class gasped in in a shared moment of appreciation that those present will long remember. Schön (1983) stated that one of the most important functions of a leader is the education of others, and this example of his principle of reflection-in-action demonstrates the value of the community in sharing ePortfolios.

In summary, the process of creating a narrative identity has important ethical dimensions, for as Ricoeur (1992) said, "the narrative unity of a life is made up of the moments of its responsiveness or failure to respond to others" (pp. 165-168). This ethical dimension is especially relevant in tying the narrative identities revealed to future plans that are grounded in social justice, an element with key importance for the mission and vision of the university, as presented below. Success is enhanced when students are fully integrated into the university (Astin, 1999), which the ePortfolio enables. Furthermore, adults who have a

strong commitment to "promoting the well-being of future generations and improving the world in which they live . . . tend to see their own lives as narratives of redemption" (McAdams, 2008, p. 255). This has implications for reinforcing the use of ePortfolios to aid reflection about narrative identity, so that action grounded in social justice will flourish.

Reimagining Boundaries Through ePortfolio Use

In their seminal text about adult learners, Knowles et al. (2012) cited as a "fact of human nature" the idea that people "feel a commitment to a decision in proportion to the extent that they have participated in making it" (p. 264). It follows that nontraditional learners demonstrate academic motivation. The challenge lies in integrating the premise of co-curricular value in ways that capture the out-of-classroom learning of nontraditional learners. Doing so intentionally through ePortfolios can help to connect experience to learning by encouraging self-reflection and growth (Elias & Drea, 2013, p. 3). Within this perspective, the competing priorities of nontraditional learners can be viewed not as distractions but as opportunities for curriculum and academic goals to deeply resonate with immediate application and relevance.

An ePortfolio provides a platform for defining co-curricular activities broadly and inclusively. It does not incentivize involvement, but nontraditional students do not require incentives to choose civic, community, career, or other activity; they begin their academic careers already so engaged (Peck & Varney, 2009). Instead, by redefining the co-curricular, the ePortfolio can connect the rich world of the adult student to the curriculum of the student's program and the learning outcomes of the institution. Furthermore, it reinforces the importance of individual and social reflection about narrative identity, which bears enormous relevance for identifying, celebrating, assessing, and enhancing the various avenues of learning that contribute to the adult student's college experience. Finally, it creates a forum through which the institution can know its students better, capturing community and career-related accomplishments that otherwise might remain compartmentalized within the other elements of students' lives. In the construction and presentation of an ePortfolio, student accomplishments that otherwise might have gone unknown emerge with their revealed stories. This bears relevance both for purposes of thorough assessment of learning outcomes and for building and celebrating a culture that truly reflects the student population.

Defining an ePortfolio Project for Nontraditional Learners

The ePortfolio project in this narrative occurs within the Human Services program at Notre Dame de Namur University in the San Francisco Bay Area in California. The students are all over the age of 25, have been employed for at least three years in a professional position, and are working to complete their undergraduate degrees. They will each earn a Bachelor of Science degree from the School of Business and Management. These students complete an ePortfolio as part of their capstone class, and their assignment includes both required elements related to assessment of program and institutional learning outcomes and suggested elements that arise from a construction of their own unique narratives about the co-curricular activities that inform their learning experiences. These include community, family, and career accomplishments, some spanning many decades. The evidence and reflections gathered from this project come through the author's role as instructor to the capstone course and Program Director for the program in question.

The following provides examples of ways in which these students have demonstrated the value of external co-curricular activities to learning goals by juxtaposing accomplishments that have been profiled through the ePortfolio process to a list of the activities "most commonly found on college campuses" (Tenhouse, 2014, p. 2): student government, athletics, academic and professional organizations, volunteer and service-related activities, multicultural activities, and the arts. It represents a sample intended to demonstrate the relevance of learning experiences within the broader community, but does not represent an exhaustive analysis of the learning experiences that contribute to and enhance the learning of nontraditional students. Furthermore, while parallels are drawn between traditional co-curricular activities and those experienced outside of institutional design in order to ground the nontraditional students' activities in an accepted model, they are not meant to confer relative value on either experience, which in many ways are inherently incomparable.

Student Government

For traditional students, this takes the form of involvement in a number of on-campus channels to represent the voice of the student to the university's administration. For adult students, this often takes other forms. In one example, a student who is also an

organizer in a nearby community led a group of youth from a teen home on whose board she serves to a political action event in Washington, DC. Doing so, she demonstrated both civic involvement and leadership, developing an understanding of political processes, putting these to work in ways that reflect both her own values and the social justice mission of the university, and then teaching and leading representatives a new generation.

Athletics

Most universities offer athletic opportunities, though often participation is limited to full-time and therefore traditional students. However, adult students are often engaged in a variety of athletic activities outside of school. Furthermore, many adult students also organize athletic opportunities; examples in just this one program include a capstone project that raised money for a medical nonprofit through a walk-a-thon and several projects with measurable goals that incentivize athletic involvement for elementary school-aged children. One student, who worked through a local athletic organization to raise money for student scholarships, now serves as Board President of that organization. His ePortfolio helps to demonstrate how the positive attributes associated with involvement in athletics have relevant parallels for adult learners, for whom participation may look different, but remains extremely important in terms of reinforcing leadership qualities, teamwork, and commitment.

Academic and Professional Organizations

These exist in traditional undergraduate settings to introduce students to occupations and to aid in job searches. Adult students are often already engaged in a career and may be seeking education for the purpose of personal fulfillment or potential promotion. The ePortfolio process encourages them to reflect upon and present evidence of their career accomplishments, which are often many. This can help enhance their resumes, and the ePortfolio itself has been used to showcase students in ways that distinguish them from other applicants. Recent graduates include several who received promotion opportunities by offering future employers the opportunity to review their ePortfolios, thus showcasing accomplishments and other personal qualities through their narrative presentation of self in ways that would not be possible with a simple resume.

Volunteer and Service-Related Activities

The list of activities in this category for traditional students includes a variety of opportunities; often, adult students have rich volunteer experiences that are enhanced through their academic experiences. A student who had volunteered for many years with the local humane society used her capstone project to create a training program for their wildlife volunteers; one who had worked a helpline organized a support group for helpline volunteers; many who participated in their children's classrooms hosted efforts that showed leadership and measurable results for those elementary learning environments. Each of these examples, captured in ePortfolios, enhances and captures student achievements in ways that are not otherwise linked to the university and yet inform its classrooms immeasurably.

Art and Diversity

Multicultural activities, as defined for traditional college students, "focus on increasing awareness and understanding of various cultures and ethnic and racial backgrounds" (Tenhouse, 2014, p. 2), and art activities include "a plethora of extracurricular opportunities" (p. 2). ePortfolios that require students to reflect specifically on the value of art and diversity as related to their learning reveal profound involvement in such activities, as well as increased knowledge about those who come from cultures different from their own. In one impressive example, a student, already active in supporting Latina artists, envisioned a scholarship program to support these individuals. Others use the ePortfolio's required reflection about diversity-related learning outcomes to share reflections on the experience of visiting a place of worship outside of their own faith traditions. As with other experiences, the practice of reflection is nourished as an important habit, one that informs the creation of a narrative identity.

Concluding Implications

The students mentioned in this narrative chose their university and program for purposes of convenience and reputation and because they are drawn to the mission of helping others. By sharing their ePortfolios and drawing connections between class work and other relevant experiences, students gain a better understanding of themselves as learners and as contributors to the broader community.

Additionally, the university is able to gain from the ePortfolio process a more accurate sense of the influence that their students have within the external organizations that comprise the community. A key strength of the ePortfolio process is that it creates a forum to reveal and celebrate accomplishments that might otherwise be seen as separate from the institution. The newspaper headline celebrating the success of a traditionally aged student often leads with

the student's university affiliation; with an adult student, the affiliation is a smaller part of his or her identity and thus not as likely to be celebrated or perhaps even mentioned. This is a lost opportunity that the ePortfolio creation process can change, for through ePortfolios the institution is better able to capture these external co-curricular accomplishments. This creative effort creates a better understanding of who adult students are, which has relevance for accurately marketing programs to potential students, for representing the university in and to the community, and for creating a stronger culture to understand and support this diverse and accomplished student population.

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A Review of *ePortfolio Performance Support Systems: Constructing, Presenting, and Assessing Portfolios* (WAC Clearinghouse, Parlor Press, 2013)

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This article provides a review of *ePortfolio Performance Support Systems: Constructing, Presenting, and Assessing Portfolios*, edited by Katherine V. Wills and Rich Rice (2013). Focused primarily on ePortfolios as a method for writing-related student learning and assessment, this collection addresses a range of concerns about support and sustainability of ePortfolios in academia, the workplace, and community. The collection is grounded in Kathleen Blake Yancey's (2004) *College Composition and Communication* essay, "Postmodernism, Palimpsest, and Portfolios" (reprinted as Chapter 1), and the rest of the chapters provide a diverse range of viewpoints, experiences, and methods that engage in various ways with that article. Wills and Rice have succeeded in gathering together a group of authors whose collective expertise makes this book an important addition to the literature on ePortfolio. Publishers: The WAC Clearinghouse (Fort Collins, CO) and Parlor Press (Anderson, SC, 2013). ISBN 978-1-60235-442-5 cloth; ISBN 978-1-60235-441-8 (paper); ISBN 978-1-60235-443-2 (adobe ebook); ISBN 978-1-60235-444-9 (epub). $60.00 cloth; $30.00 paper.

If there is one thing that my experience as an ePortfolio practitioner and researcher has taught me, it is that the process of portfolio learning and assessment requires an astounding amount of support at all levels of the practice. From students who need the right kind of pedagogical scaffolding to build folio thinking, to instructors who want to understand how to construct that scaffolding effectively, to administrators who may have to be educated about what ePortfolios offer and how to parse the kind of reflective learning that portfolios provide as evidence for assessment purpose — all of the stakeholders in ePortfolio practice need carefully constructed, accessible, and sustainable infrastructures of all kinds in order to build, support, and maintain a folio-based approach to teaching and learning. For those of us in the ePortfolio community, the benefits of portfolio learning and assessment are generally clear: ePortfolios, when integrated thoughtfully into the curriculum, offer the kind of rich, nuanced picture of student learning that other measures, like testing, do not. Yet we also know that portfolios—and ePortfolios, in particular—pose complex challenges, even to their most ardent supporters and advocates.

In my own work as the director of a writing program that requires a capstone ePortfolio representing nineteen hours of undergraduate coursework, I have experienced such challenges first-hand. My students need to have the tools to "collect, select, and reflect" and ultimately assemble and present their portfolios. I need access to resources and research on best practices that will help me help my students through the demanding process of reviewing and making sense of many semesters' worth of work. My institution needs evidence of student learning, and employers and graduate schools want to see what students who earn a certificate in writing can actually do as writers. Luckily, I have a number of support systems in place, from technological tools to research and administrative support, that enable me to successfully engage in the practice of ePortfolio pedagogy and assessment. My students and I exist in an ecosystem in which ePortfolio was integrated holistically into the First-Year Composition Program through a considered approach that recognized the value of and need for support structures built into the system from the ground up, and we have benefitted from that strong infrastructure. Without such a foundation, an ePortfolio initiative can crumble when the technology does not afford what we need, or the pedagogy does not fit with the tool, or the outcomes are not demonstrated effectively by the output, or ongoing accretion and presentation are not feasible. As researchers and practitioners call for ePortfolio to spread beyond the classroom, the program, and the institution as a tool and method for lifelong learning (e.g., Cambridge, 2010; Heinrich, Bhattacharya, & Rayudu, 2007; Lorenzo & Ittelson, 2005; Porto & Walti, 2010, 2013), the need for support systems is heightened and highlighted.

By titling their collection, *ePortfolio Performance Support Systems,* Wills and Rice (2013) foreground the idea that performance is tied inextricably to the infrastructures (e.g., technological, pedagogical, and systemic) that support and enable learning. Focused primarily on ePortfolios as a method for writing-related student learning and assessment, this collection addresses a range of concerns about support and sustainability as ePortfolios become more widely adopted and integrated into the landscape of higher education and the workplace. The collection itself traverses a broad landscape, covering such ground as "assessment and accountability, learning and knowledge transfer, principles related to universal design for learning, just-in-time support, interaction design, and usability testing" (Wills & Rice, 2013, p. 3). The editors have divided the collection into four sections,

each consisting of three essays, in an effort to organize this wide-ranging material into intellectually cohesive groupings. The first section's chapters deal in various ways with systematic thinking with regard to ePortfolios; the second's consider how ePortfolio can construct bridges from academia to the workplace; the third's consider support for the kind of interactive and usable design that is vital to ePortfolio; and the final section's essays take on the subject of transition and transfer between methods, between courses, and between learning and the measurement of that learning. This organization allows readers to negotiate the material presented in the collection based on their specific concerns, while also getting a sense of the range of support issues that ePortfolio practitioners might encounter.

The first section, "Systematic Performance Support Systems," opens with an essay that will likely be familiar to ePortfolio scholars and practitioners in the writing studies community, Yancey's (2004) *College Composition and Communication* article, "Postmodernism, Palimpsest, and Portfolios," which, as Wills and Rice (2013) explain in the introduction, is "foundational to the ePortfolio conversations of this collection" (p. 4). Certainly, it is foundational for any discussion of digital portfolios, as Yancey (2004) in this essay established some key concepts that have come to be axiomatic in thinking about digital portfolios: that they are fundamentally different than print portfolios; that they are inherently reflective in nature; and that they are, in and of themselves, unified compositions that draw on the linking enabled by digital media to become "palimpsest and palimtext both" (p. 27) through the layering and mapping (and re-mapping) of multiple representations and contexts inherent in teaching and learning that is created by means of this capability.

What is missing from the collection, perhaps, is a more thorough discussion of those key concepts as a framework for reading the rest of the collection. The introduction spends more time detailing the backgrounds of the contributors than it does creating a theoretical framework through which to think about the ideas of performance support systems, taken both as a singular concept and as individual concepts. In truth, each of those terms could use some unpacking in relation to ePortfolios. Take the term performance, for example. As Yancey's (2004) essay concluded, ePortfolios, in allowing for re-arrangement, "permit different inventions, invite different representations" (p. 31). Hence, an ePortfolio is itself a performance, one that changes according to who is reading and the purpose and context for that reading. The performance consists of multiple layers of representation and context, so what are the multiple ways we might understand the concept of performance and its implications for ePortfolio practice? Is an ePortfolio a performance of identity—professional and/or personal? of skills and/or competencies? of measurable outcomes that might be used to evaluate whole programs and institutions? A more explicit foregrounding of these kinds of questions might be useful as a way to set up what follows Yancey's (2204) opening provocation.

The subsequent chapters do cover all these questions about performance (as well as numerous ways of understanding the terms support and systems), certainly, but it would have been instructive if the introduction had put them into a cohesive dialogue with each other as terms and with Yancey's (2004) "seminal article" (Wills & Rice, 2013, p. 4) in order to draw out some of the problematic and productive ways we might think about these terms (individually and collectively) and to construct a clearer conceptual understanding of the collection's title. Only three of the other essays in the collection *ePortfolio Performance Support Systems* engage explicitly with Yancey's (2004) piece (i.e., through citation), so there is an unmet opportunity here to create a stronger through line for the collection, and an introduction (or perhaps an afterword) that puts some of the essays into a stronger theoretical context is something I found myself wishing for.

Despite this (or perhaps because of it), I did find myself actively trying to make connections between the chapters, and that process was, appropriately, much like the process of reading ePortfolios. While reflective elements generally create the cohesion that binds a strong ePortfolio into a coherent whole, the links between the exhibits in an ePortfolio create, as Yancey (2004) pointed out, a "gallery-like" (p. 26) experience in which both repetition and difference are embedded. The links and paths laid out by the portfolio's composer may not be followed by the viewer, or may suggest unintended narratives and connections. The ePortolio itself may display signs of re-thinking, revision, and reiteration. Interestingly, many of the chapters here deal explicitly with those three "R"s in their focus on the authors' processes of researching and implementing ePortfolio practices and programs. So, while all quite different, each of the essays demonstrates the concern with performance support systems in its emphasis on such issues as planning, piloting, researching, and theorizing—on forming the foundational structures, in other words, that will allow for sustainable practice. This thematic unity provides readers the opportunity to read the text and find the narratives and links that are relevant for their own ePortfolio practice.

Whether theorizing how to re-think the teaching philosophy statement through ePortfolio, as in Rice's essay, "The Hypermediated Teaching Philosophy ePortfolio Performance Support System," or how to conceptualize a communal ePortfolio that will effectively and thoughtfully detail the experiences of a community in its efforts to improve and develop literacies by analogy with a controversial museum, the subject of Darren Cambridge's excellent, thought-provoking chapter, "From

Metaphor to Analogy: How the National Museum of the American Indian Can Inform the Augusta Community Portfolio," many of the chapters ask that we re-think the ways we present a particular picture (of ourselves, our learning, our communities) to an audience. The social aspect of ePortfolio—the interactivity between author and audience—is at the forefront in this collection and, though those audiences may differ (e.g., potential employers, instructors and others involved in academic assessment, the public, learners themselves), the authors all provide examples and experience of ePortfolio as "performance" and how any kind of performance must be scaffolded with pedagogy, research, technology, and theory.

Many of the chapters provide insight into some of the well-known ePortfolio initiatives. It is instructive and edifying to learn from Karen Ramsay Johnson and Susan Kahn about the trial and error process of developing an effective scaffolding for reflection that will help English majors articulate the value of their major to themselves and others in their English Capstone ePortfolios at Indiana University-Purdue University Indianapolis. It is exciting to hear from Carl Whithaus that he and his colleagues at University of California, Davis were replicating and extending prior research on how ePortfolios affect revision in student writing and transfer of writing skills across the curriculum. It is heartening to see the attention being paid to accessible design and interfaces for visually impaired ePortfolio users by Sushil K. Oswal at the University of Washington Tacoma and how that raises important questions about the benefits and drawbacks of ePortfolio for disabled students and instructors. It is reassuring to discover, as Mark Zaldivar, Teggin Summers, and C. Edward Watson report, that the long, complicated process of dialogue between multiple stakeholders can result in assessment data that is useful and authentic.

Each of the chapters presents an important piece of the larger ePortfolio puzzle while exposing the missing pieces, the un[der]explored questions that will help us continue to shape useful support systems that allow for the kind(s) of performance(s) that we want to achieve with and through ePortfolios. I find myself thinking of this collection as an ePortfolio itself. Though the organization and presentation of the chapters suggests a certain narrative in its organization and each section prefaced with an epigraph and illustration that serves to evoke a particular way of thinking about the topic of that section, there are other narratives that emerge from taking the chapters on their own and in different order. Such a reading process is particularly engendered if a reader chooses to access the text through the WAC Clearinghouse website, where .PDF files of each chapter are freely available (though this method eliminates those epigraphs/illustrations, which I find somewhat regrettable). Also like an ePortfolio, this collection could benefit from a reiteration that addresses the numerous and frustrating editing problems a reader encounters throughout the text. Still, *ePortfolio Performance Support Systems* is a welcome and valuable addition to the literature on ePortfolio. The multiplicity of viewpoints, experiences, and methods recounted in these chapters is vital and will provide ePortfolio practitioners from all quarters with something useful to take away for consideration, implementation, or clarification. Wills and Rice have succeeded in gathering together a group of authors whose collective expertise makes this book a must-read for the ePortfolio community.

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