The power of ePortfolio development to foster reflective and deeper learning in an online graduate adult education program

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Abstract:

The current study addressed two problems in adult education: the lack of published research on the use of ePortfolios in graduate adult education, and more specifically, how can graduate adult educators utilize ePortfolios to foster reflective and deeper learning in a graduate adult education program? This was a 3-year qualitative study of 36 master's students in their final capstone course in an online graduate adult education program. The primary research question was Can developing ePortfolios foster reflective and deeper learning in an online graduate adult education program? Researchers analyzed student responses to three guideline questions for the development of their ePortfolios: (a) What story did your ePortfolio tell?, (b) What surprised you?, and (c) What did you learn about yourself? These questions were designed to stimulate students' thinking about their learning from the ePortfolio process, artifacts, and experience in the degree program. Through thematic analysis of student responses to these questions, three predominant themes emerged that provided evidence for reflective and deeper learning. The three themes were as follows: (a) Students became more reflective learners who frequently experienced deeper transformative learning, (b) Students were surprised by greater self-discovery and significant personal growth exceeding their expectations, and (c) Students found new personal strengths. Specific recommendations were provided about how to use ePortfolios in graduate adult education programs to foster reflective and deeper learning.

Keywords: ePortfolios | adult education | capstone course | reflective learning | deeper learning

Article:

Background

The context of this study is the emerging and increasingly successful use of ePortfolios in higher education and the tremendous opportunities they provide for innovation in learner engagement (Deneen & Shroff, 2014). However, within this context, there exist two problems that relate to graduate adult education. First, there was and continues to be a surprising lack of

published research or articles about the use of ePortfolios in graduate adult education. In fact, the authors of the current article found no published studies about the use of ePortfolios in graduate adult education in major adult education journals. To address the research void, the authors focused on a second problem faced by many graduate adult education faculties. The problem is how can we really know what our adult education graduate students learned beyond simple memorization or rote learning typically measured by examination scores or course grades? This study investigated a solution to the second problem through the innovative use of ePortfolios to foster reflective and deeper learning.

Numerous studies provide the background for using ePortfolios to foster reflective and deeper learning. John Zubizarreta (2004) was an early advocate of using learning portfolios to foster reflective and deeper learning and described the learning portfolio as follows:

…a flexible, evidence-based tool that engages students in a process of continuous reflection and collaborative analysis of learning. As a written text, electronic display, or other creative project, the portfolio captures the scope, richness, and relevance of student learning. The portfolio focuses on purposefully and collaboratively selected reflections and evidence for both improvement and assessment of students' learning. (p. 16)

The development of online learning ushered the emergence of the ePortfolio as a valuable online tool that learners, faculty members, and institutions can use to collect, store, and share information electronically (Abrami & Barrett, 2005). However, an ePortfolio can be much more than a compilation of student work. Barrett (2010) underscored two faces of ePortfolios: one for documenting learning and serving as a workspace for reflection and one for showcasing achievement. She emphasized that "the real value of an ePortfolio is in the reflection and learning that is documented therein, not just the collection of work" (p. 5).

Reflective learning is a key concept in the present study. John Dewey (1933) believed that reflection is a critical consideration in the development of knowledge and beliefs and that people learned best from reflecting on their experiences. He defined reflection as the "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends" (p. 9). He went on to later write that reflection stands at the core of deeper learning and is key to processing experience (Dewey, 1997).

Reflective learning is closely associated with the development of self-knowledge and transformative learning. Cranton (2016) emphasized the value of reflective learning and extended Mezirow's (2000) concept of transformative learning when she reflected on her practice as a classroom teacher and wrote as follows:

…transformative learning is about the individual stories the breakthrough moments, the recognition of long-held, unquestioned assumptions, the drawings of an understanding of a new perspective, the opening up to alternatives, the seeing of self in a new way. (p. 190)

The close connection between reflective learning and transformative learning is also apparent in the work of Rogers (2001) who found commonalities in his study of seven different theoretical approaches to reflection. He found that reflection is a cognitive and affective process or activity that (a) requires active engagement on the part of the individual; (b) is triggered by an unusual or perplexing situation or experience; (c) involves examining one's own responses,

beliefs, and premises in light of the situation at hand; and (d) results in the integration of the new understanding into one's experience.

Deeper learning is the other key concept in the present study. Most significant to the present study is the definition of deeper learning by Czerkawski (2014) who described the concept as follows: "Deeper learning promotes students' active engagement in learning environments so they can continuously explore, reflect and produce information to build complex knowledge structures" (p. 29). The Hewett Foundation (2013) described deeper learning even more specifically, in terms of six deeper learning competencies where students " . . . master core academic content, think critically and solve complex problems, communicate effectively, work collaboratively, learn how to learn, and develop academic mindsets" (p. 1). These competencies underscore the deeper learning sought in the ePortfolio course experience in the present study. More recently, Weber and Myrick (2018) wrote that students can find greater meaning in their educational practices and better understand their learning processes through reflective practice which in turn leads to deeper learning and more confidence in their abilities.

Additional evidence supports the close connection between the development of ePortfolios and reflective and deeper learning. Klenowski et al. (2006) described that an ePortfolio is more than just an electronic collection of artifacts of learning; an ePortfolio allows students to reflect upon and demonstrate deeper learning by helping them to connect and make sense of their experience. Donnelly and O'Keeffe (2013) found that integrating ePortfolios into a graduate program in higher education enhances deeper learning. They found that it is a valuable tool that facilitates continuous growth and learning in students by adding value to the development and understanding of creative learning. Eynon et al. (2014) described how ePortfolios made learning visible and encouraged learners to reflect and engage in deeper, integrated learning. Numerous authors addressed how ePortfolios and reflective practice facilitate the development of deeper learning as well as higher-level thinking skills and personal growth (Buyarski et al., 2015; Harring & Luo, 2016; Slepcevic-Zach & Stock, 2018).

Probably the most significant milestone supporting the relationship between ePortfolios and deeper learning is that ePortfolios have been added to the list of High-Impact Practices (HIPs; Kuh, 2017; Watson et al., 2016). Kuh (2008), along with researchers from the Association of American Colleges and Universities (AAC&U), identified the initial 10 HIPs. HIPs denote institutionally structured student experiences inside or outside of the classroom that are associated with elevated performance across multiple engagement activities and desired outcomes, especially deep learning, persistence, and satisfaction with college. More recently, Eynon and Gambino (2017) developed a comprehensive resource about high-impact ePortfolio practices which describes how to implement the use of ePortfolios in multiple settings and further illustrates how ePortfolios enable students to engage in deeper learning.

The current study examined whether the ePortfolio development process could foster reflective and deeper learning specifically in a graduate adult education program. Therefore, the primary research question of the current study is as follows:

Research Question 1 (RQ1): Can developing ePortfolios foster reflective and deeper learning in an online graduate adult education program?

The Adult Education Capstone ePortfolio Course

Morreale et al. (2017) described a capstone portfolio as a digital space where students can

gather and integrate their learning experiences, demonstrate their growth as learners, and connect their learning to the world. The capstone ePortfolio course in the current study is a one semester 16-week course typically completed during the last semester of the graduate program. Students synthesize, integrate, and reflect upon the capstone ePortfolio experience and what they have learned throughout their entire adult education program.

The capstone ePortfolio course is composed of eight modules. During each module, students develop and post drafts of different components of their ePortfolio in a discussion forum. Components of the total capstone ePortfolio include an introductory and concluding framing statement, a statement of professional goals, a minimum of eight artifacts that exemplify their best learning from their coursework along with caption statements, a plan for future learning, and a current resume. Artifacts are typically final course papers, projects, or other documented learning. Each artifact is posted with a caption statement where students provide reflective comments about how the artifact impacted them, for example, how it increased their learning and what changes they would make. As components of the ePortfolio are drafted and posted, a group of three other students and the course facilitator engage in constructive reflective feedback and dialogue with each of the students until that component is finalized for the completed ePortfolio.

The final component of the ePortfolio is a concluding framing statement that was used as the database for the current study. The concluding framing statement allowed students to provide a final summary and reflective analysis of what they presented in their ePortfolios and learned in the degree program. Students followed guideline questions for this concluding framework component and their responses to three of those guideline questions were selected for data analysis of this study. The questions were designed to stimulate students' thinking about their learning from the ePortfolio process, artifacts, and experience in the degree program. The three specific guideline questions were as follows: (a) What story did your ePortfolio tell?, (b) What surprised you?, and (c) What did you learn about yourself?

Degree Program

This was a graduate online MS Ed in adult education degree. Students must earn 36 semester hours of coursework to graduate. There are 21 hr of required core courses and 15 hr of electives. The mission of the program is to prepare individuals to engage with adults for the purpose of promoting lifelong learning as a conscious and purposeful process in a variety of organizational and community contexts. Core and elective courses are discussed with a faculty advisor to ensure that students pursue an integrated program of study to support their professional goals.

Method

Research Design

This is a follow-up study of a previous in-house study (Merrill, 2015), which received Institutional Review Board (IRB) approval (exempt status). In that study, researchers investigated whether the goals of the ePortfolio capstone portfolio course were being met, for example, did they document the quality of their work in graduate courses and describe the

application of adult education principles? The current follow-up study sought to foster more detailed and in-depth evidence of reflective and deeper learning as students developed their ePortfolio. Students enrolled in the capstone ePortfolio course were required to document their overall experiences using a chronological order (i.e., where they are now, where they were before they took the course, and where they see themselves in the future) about their individual journeys, which allowed the researchers an opportunity to study personal narratives of experience (Riessman, 2008). Narratives encourage us to immerse and interpret the perspective of the narrator because "narratives are strategic, functional, and purposeful" (Riessman, 2008, p. 8). Therefore, a narrative design methodology provided the theoretical lens for this study. Through this narrative design, the researchers were able to focus on the students' individual stories to understand and represent their individual experiences (Creswell, 2012). Later, the researchers employed a thematic approach to find common thematic elements across research participants and the events they report (Braun & Clarke, 2006; Riessman, 2008).

Participants

The participants in this one semester capstone ePortfolio course included nine males and 27 females. Students typically had undergraduate degrees in arts and humanities followed by business, whereas others had degrees in professional areas, especially health sciences such as nursing and radiography. Most participants were employed in post-secondary education, typically teaching and administration. The second greatest area of employment was business, typically human resource development and training.

Data Collection

Data were collected from the online submission of students' final reports for the ePortfolio capstone course. Students wrote narrative reflections of their experiences for the course using chronological order (i.e., past, present, and future). The course was the last course of their program, where they chose eight selected artifacts and provided detailed narration about these artifacts. Researchers selected specific segments from the narration, which provided markers of the three guideline questions—(a) What story did your ePortfolio tell?, (b) What surprised you?, and (c) What did you learn about yourself?—related to the development of their ePortfolios. The first researcher taught the course from fall 2016 to spring 2018 and provided the data after hiding the identities of the participants. The 36 portfolios were analyzed together starting in 2019.

Data Analysis

Researchers selected specific segments from the narration, which provided markers of the above three guideline questions related to the development of their ePortfolios. The first

researcher taught the course from fall 2016 to spring 2018 and provided the data after hiding the identities of the participants. The 36 portfolios were analyzed together starting in 2019.

Using inductive thematic analysis, the researchers coded data to gain an understanding of how individual students reflected on their learning experiences through the development and utilization of an ePortfolio. The researchers used inductive (bottom-up) analysis because their analysis was data-driven and the researchers coded the data without trying to fit it into a preexisting coding frame (Braun & Clarke, 2006).

First, to reduce ambiguity and bias in the coding process, student names and identifiable information were removed from the narrative reflections. This eliminated coder bias toward any particular student. Second, the researchers reviewed a few of the students' reflections together and practiced coding to establish the criteria for the coding process. Practicing together helped reduce the uncertainty in the judgment process for coding student narratives. Researchers analyzed student responses to three guideline questions for the concluding framing statement component of the ePortfolio. For each criterion, each individual researcher came up with three to four codes.

Table 1. Students' Reflective Statements in ePortfolios and the Derived Codes

Students' statements	Code
It demonstrates my transformation from a professional nurse to a full-fledged adult educator.	*Transformation*
Another surprise that I discovered during the creation of this ePortfolio has been the pleasure and enhanced learning that I've experienced as a result of collaborating with my peers.	*Collaboration*
Putting together this ePortfolio has been a wonderfully educational experience by leading me to reflect more deeply on my own journey as a lifelong learner and educator.	*Invaluable Experiences*
I feel reaffirmed in my commitment to education and to the importance the role of education plays in change for the future.	*Reaffirmation*
My ePortfolio theme, *A Reflection of Individual Growth*, was developed from the most significant observation I made while in the midst of this program: personal growth.	*Personal Growth*
This ePortfolio is a summary of my desire to be an educator of transformative learning.	*Transformative Learning*

After completing initial codes individually, both researchers met and reviewed all the codes together to reach a shared understanding. Together the researchers looked through all the codes and narrowed them down to two codes for each category for each individual student's reflection. In the end, the researchers came up with a total of 216 codes for three categories of 36

ePortfolios. Table 1 shows several examples of students' reflective statements and the codes devised from those statements.

After generating initial codes, the researchers looked for patterns that led them to search for themes (Braun & Clarke, 2006). During the analysis process, researchers paid special attention to the credibility, transferability, dependability, and confirmability of the data to ensure the trustworthiness (Guba & Lincoln, 1982). By employing a well-established research method, the duration of the data collection process, reflective appraisal of the project, frequent debriefing sessions, peer scrutiny, an examination of previous research findings, and an audit trail contributed to maintaining the trustworthiness of this research (Shenton, 2004). Furthermore, bracketing was considered to mitigate bias during the analysis process as the first author taught this course over 2 years. Through multiple practices over time, contextual clues, using artifacts as intangible inputs, and reflective feedback from the second author (Vagle, 2014), bracketing allowed researchers to maintain trustworthiness, as well as build the rigor of the research (Ahern, 1999).

Findings and Discussion

Three dominant themes emerged as a result of consultation and agreement between the two researchers. The three themes are differentiated from one another by virtue of iterative analysis of the framing statements produced by the participants. The iterative analysis revealed that students overwhelmingly reported positive changes, such as transformation, deeper understanding, self-belief, personal growth, self-identity, knowledge integration, collaboration, determination, and so on. Researchers used these markers against the three guideline questions—(a) What story did your ePortfolio tell?, (b) What surprised you?, and (c) What did you learn about yourself?—which ultimately allowed them to agree upon three distinct themes. The themes were as follows: Theme 1: Students became more reflective learners who frequently experienced deeper transformative learning, Theme 2: Students were surprised by greater self-discovery and significant personal growth exceeding their expectations, and Theme 3: Students found new strengths. The themes are presented and discussed below.

Theme 1: Students Became More Reflective Learners Who Frequently Experienced Deeper Transformative Learning

Students frequently reported their ePortfolio development experience enabled them to be engaged in valuable reflective practice. One student commented, "Putting together this ePortfolio has been a wonderful educational experience by leading me to reflect more deeply on my own journey as a lifelong learner and educator." Another student commented as follows:

> As I read through old postings, essays, and projects, a clear picture of a person in search of something, and trying to find her way emerged. I could see the paths I traveled,

including the blind alleys that I wandered down only to retreat in frustration. It was ultimately a very affirming process.

Students also mentioned the value of how developing their ePortfolio enabled them to see the connection between their graduate learning and their own personal growth and development and the importance of utilizing their new learning. One student commented as follows: "I learned that I am capable of reflective learning and that it is crucial to follow up reflective learning with action to truly reap the benefits."

Numerous students expressed deeper transformative learning. One student reported as follows: "Selecting and improving my portfolio documents has taken me back to many of the decisive moments within the program, and has led me to appreciate the value of transformative learning, which is the process of perspective transformation." The transformative dimension of perspective change was seen through the following student's comment:

Another thing that surprised me after reading over my materials is how closed minded I seemed to present myself in the first few classes of the program. I see more open-mindedness in my approach to education. I feel like I am still changing in some very positive ways as I continue to learn about other perspectives outside my own.

Gaining self-confidence was frequently reported as an example of student transformation. One student stated as follows: "My e-portfolio contains the story of a person who was lacking in direction and guidance, but now has enough of both to proceed, to continue learning, and to be successful." Another comment was as follows: "I think what I have learned in this program has definitely made me more considerate of how others view the world. I feel like my perspective on life in this world has expanded to a wider view."

Theme 2: Students Were Surprised by Greater Self-Discovery and Significant Personal Growth Exceeding Their Expectations

Many students reported that they were actually surprised by how much they grew in their competence and confidence. They became more mindful and aware of their own learning to find their own voice and become more confident in themselves. One student said,

There was a bit of a surprise in realizing just how far I have come. I could tell I was growing and changing as an individual, but not until I had really taken a step back and looked through my artifacts and reflected on them and myself have I realized my true growth.

Another student commented as follows: "In the beginning of this portfolio process, I was somewhat wary of this project. I wasn't sure I had anything coherent to say. But I'm pleasantly

surprised at how it came together." Another student reported as follows: "Until pulling all of my artifacts together into the creation of this portfolio, it hadn't dawned on me how wrong the 'banking model' had felt all along and how I had craved to find a more meaningful approach to teaching and learning."

It was especially interesting to see how much students were surprised by the value of engaging in collaboration while they constructed their ePortfolios. For example, one student stated as follows:

Another surprise that I discovered during the creation of the e-Portfolio has been the pleasure and enhanced learning that I've experienced as a result of collaborating with my peers. I am truly grateful to my two classmates who have helped me throughout the making of this e-Portfolio with their support, active and thoughtful comments, great suggestions, and edits.

Another student responded as follows:

I was surprised to discover that 25% of my portfolio has to deal with group projects. I have also been pleasantly surprised by the amount of camaraderie that has gone into it. This amount of collaboration has also shown me the importance of teamwork, something that I hope to continue throughout my career.

These comments about collaboration again support the earlier work of Moon (1999) who described the value of using ePortfolios as collaboration and mentoring to achieve deeper learning.

The impact of the ePortfolio development on students' personal growth was also clear. For example, one student commented that "The ePortfolio tells the story of personal growth as I develop new perspectives about myself. Selecting artifacts and reflecting on the learning represented by each, reminded me of just how much I have grown in a very concrete way." Another student reported as follows: "This portfolio demonstrates my personal growth in coming to this eclectic style of teaching to become the most effective educator I can be. It highlights the development I have undergone personally, academically and more importantly, professionally." Another student described how his personal growth fostered greater self-awareness and a strong intention to follow a different path. The student stated as follows:

By far the biggest surprise of this exercise was arriving at the realization that although I am a helper, I am far too complacent. I have come to recognize many of the inequalities and injustices in the world. I want very much to be an agent of change even if this means knocking over a few apple carts.

These results confirm the results of prior research by Donnelly and O'Keeffe (2013) about ePortfolios adding value to and deepening student learning and that the ePortfolio as a tool facilitates continuous growth and learning in higher education students.

Theme 3: Students Found New Strengths

Students frequently mentioned that the ePortfolio process enabled them to find new inner strengths, including, as previously mentioned, a gained self-confidence, as well as perseverance, a new sense of identity, becoming more self-sufficient and an appreciation for collaboration. One student said,

> My e-portfolio contains the story of a person who was lacking in direction and guidance, but now has enough of both to proceed, to continue learning, and to be successful. I am surprised that I have the confidence to say that.

Examples of their new confidence were consistent references to becoming more self-sufficient and believing in their own ability to accomplish their goals. One student mentioned as follows: "Overall, the portfolio shows that I continuously challenged myself to step outside of my comfort zone. This made me stronger and more determined to continue on this path of challenging myself."

It was also revealing how many students reported perseverance as a new strength. Students found that if they set goals through hard work and perseverance they could achieve their goals even in light of personal difficulties such as family problems and illness. One student commented as follows: "I have been reminded of who I am. I am resilient. I still can achieve my goals. It only takes setting my face like flint and continuously seeking ways to work around the obstacles in front of me."

One of the major areas of growth and deeper learning reported by many students, and probably the most valuable, was that of developing a new sense of personal identity, truly an earmark of deeper learning. This stronger personal identity reflected the culmination of their newly developed strengths. This outcome is highly supported by previous research concerning the development of ePortfolios. Rowley and Munday (2014) described how the reflective work of assembling an ePortfolio can help students develop "a sense of self," which they considered "the most valuable outcome of an ePortfolio" (p. 79). This confirms Yancey's (2009) assertion that the kind of reflective thought inspired by ePortfolio compilation "fosters the identity of a learner" (p. 14). For Reynolds and Patton (2014), engaging in reflection not only builds students' confidence and develops deeper learning but leads to identity development, the highest stage of integrative learning that ePortfolios can inspire.

Summary

The findings revealed that the ePortfolio experience did foster reflective and deeper learning. Had students not engaged in the ePortfolio experience, they would not have had the opportunity to utilize the guideline questions to reflect on what they learned from the ePortfolio development process or gain additional learning from revisiting their prior coursework and projects. Students described reflective and deeper learning clearly connected to their ePortfolio development experience and consistent with how reflective and deeper learning were described in the literature review. For example, with respect to reflective learning, students referenced the development of self-knowledge, transformative learning, breakthrough moments, recognition of unquestioned assumptions, understanding of new perspectives, and seeing oneself in a new way. With respect to deeper learning, students referenced gaining a deeper understanding, working collaboratively, thinking critically, communicating more effectively, gaining more confidence in their abilities, making sense of their experience, and increased self-awareness and self-discovery.

The researchers were pleased that the results were consistent with contemporary ePortfolio research related to reflective and deeper learning in that ePortfolio development increased knowledge and skills for learning, increased student motivation, helped promote student pride in their intellectual and personal growth, and helped students appreciate the practice of reflection (Weber & Myrick, 2018).

Conclusion and Recommendations

The ePortfolio development experience in this study fostered reflective and deeper learning by enabling students to discuss the impact of their learning from the ePortfolio development process, artifacts, and learning in the adult education graduate degree program. It was clear that this portfolio experience often had a dramatic and powerful impact on the learning of many students who used their artifacts as springboards to think more deeply about their learning and consider its meaning in relation to their personal and professional lives. The findings from this study have the potential for graduate adult education programs and the researchers make the following recommendations.

First, given the impact ePortfolios have on fostering reflective and deeper learning from this current study, it would be worthwhile for graduate education programs to utilize ePortfolios in the pursuit of reflective and deeper learning for its students.

Second, the current study clearly demonstrates that reflective and deeper learning are valuable experiences not only in a program-ending ePortfolio capstone course but also could be incorporated into coursework throughout a student's adult education graduate program. In fact, the earlier in the program, the better.

Third, expanding reflective learning experiences for students is important but providing teachers with suggestions for the teaching and nurturing of reflective practice is equally important (Finlay, 2008). More specifically, teachers could increase opportunities for students to engage in developing learning journals (Blaschke & Brindley, 2011; Moon, 1999) or use Brookfield's (2017) Critical Incident Questionnaire (CIQ) at the end of classes. The CIQ is

especially useful in identifying how students are experiencing class activities that help or hinder their learning.

Fourth, graduate adult education programs can capitalize on using the ePortfolio experience to encourage critical thinking. This is supported not only by the current study but by the research of Morreale et al. (2017), who described how a capstone ePortfolio experience can foster critical thinking skills and deeper learning. Farrell and Seery (2019) described the theoretical links between learning portfolio practice and critical thinking and found that learning portfolio development experience clearly facilitates the development of critical thinking skills. Brookfield (2017) also emphasized the importance of critical reflection in teaching and learning as he helped both teachers and learners learn how to develop and use the skills of reflective inquiry.

Fifth, choosing an ePortfolio platform is very important. Students in the current study had different levels of technology proficiency which made it easier or created obstacles for their ePortfolio development. Adult education faculty and students should therefore be provided training on using the technology options and platforms available for developing ePortfolios.

Overall, utilizing ePortfolios in graduate adult education programs can foster reflective and deeper learning. Even so, there are still challenges to be confronted in the future, such as assessing the quality of the ePortfolio, addressing how students best learn and interact with ePortfolio platforms, and providing more opportunities for students to engage in collaborative learning. Nevertheless, based on the current study, the benefits of incorporating the use of ePortfolios into graduate adult education to foster reflective and deeper learning are worth pursuing.

Conflict of Interest

Funding

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