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Special Issue

Defining Practice and a Research
Agenda: Selections from AAC&U's Fifth
Annual E-Portfolio Forum

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Special Issue

**Defining Practice and a Research Agenda: Selections from AAC&U's
Fifth Annual E-Portfolio Forum**

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Editorial: A Call for More Rigorous ePortfolio Research

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This special issue of the *International Journal of ePortfolio* is entitled "Defining Practice and a Research Agenda: Selections from AAC&U's Fifth Annual E-Portfolio Forum." This article serves as an introduction to the special issue, provides highlights from the E-Portfolio Forum, and concludes with a call concerning new directions for rigorous ePortfolio research.

Framing the Issue

The Association of American Colleges and Universities' (AAC&U) fifth annual E-Portfolio Forum, E-PORTFOLIOS: Defining Practice and a Research Agenda, examined the driving question: What is the evidence supporting the theoretical connections between ePortfolio and student outcomes? The Forum engaged attendees in both sharing their current research and practice and helping define the research agenda moving forward. As one of AAC&U's academic sponsors for the Forum (along with the Association for Authentic, Experiential and Evidence-Based Learning [AAEEBL]), the *International Journal of ePortfolio* (IJeP), is the leading outlet for research studies on ePortfolio for learning, assessment, personal development and beyond. As such, IJeP has devoted this special issue of the Journal to research articles from campus practitioners who presented their findings at the 2014 AAC&U E-Portfolio Forum.

The ePortfolio community has been growing rapidly in recent years. Well over forty percent of higher education institutions now report using ePortfolios on their campuses. As part of AAC&U's Liberal Education and America's Promise (LEAP) initiative, ePortfolios have been encouraged as a potentially significant strategy for integrating student learning, faculty engaged pedagogies and curricular alignment. With the establishment of AAEEBL in 2009, the professional organization for ePortfolio faculty and administrators and its growing set of resources and conferences, AAC&U has a partner in the promotion and exploration of ePortfolios and their value. The ePortfolio community now has a robust locus for engaged learning and practice centered on effective use of digital resources.

At the same time, the growing awareness of and interest in ePortfolios related to student learning and student success has increased the demand for evidence that ePortfolios are or can be correlated with measures of improved learning and completion. IJeP is the primary response to many of those calls for evidence. As the primary outlet in the United States for research on the effects of ePortfolios for the variety of audiences

interested in this pedagogical approach, AAC&U has strongly supported the efforts of IJeP to create an on-line and print venue for disseminating the research on all aspects of ePortfolio use as well as the Journal's call for more rigorous and generalizable research on the multi-faceted outcomes of ePortfolios for students, faculty, and institutions.

The 2014 AAC&U E-Portfolio Forum focused one of its two Tracks on research evidence, calling upon the e-Portfolio community to share the research already underway on campuses across the country. The Forum combined presentations of campus practice and findings, a crowdsourcing exercise on new areas of research needed to support continued ePortfolio use, and an analysis of previously published research on ePortfolios in IJeP and other journals. The presenters for each research session also were invited to prepare a paper on their research methodology and findings. The papers were then peer reviewed by IJeP. This issue contains accepted research papers presenting evidence of ePortfolios related to student learning and success.

Opening Plenary

The Opening Plenary of AAC&U's 2014 E-Portfolio Forum focused on the research around neurological bases of learning and how ePortfolios are a robust medium that allows for capturing, demonstrating and integrating student learning through a broad set of practices and modes. A further focus was on the Degree Qualifications Profile (supported through Lumina Foundation funding) that provides a framework designed to assess college/university-level learning regardless of where, when or how it was acquired. The emerging Global Learning Qualifications Framework is the result of extensive research and builds on the progress of qualification frameworks from over 90 countries, the Lumina Degree Qualifications Profile, the Association of American Colleges and Universities (AAC&U) Essential Learning Outcomes and VALUE Rubrics, and other emerging work in the field. This plenary asked us to place the E-Portfolio Forum work in a

neurological and global context for examining research questions as the ePortfolio community moves forward.

Findings from the “Crowdsourcing ePortfolio Research” Exercise

The crowdsourcing activity, conducted during lunch by Helen Chen on the day of the E-Portfolio Forum, was designed to leverage the collective knowledge and interests of the over 150 ePortfolio community members in attendance. Attendees were asked to respond to the question, “What is your burning research question about ePortfolio?” and to write their question on an index card. These questions were subsequently traded away and through a series of five pairings among attendees, each question was given a score from 1 to 5, based on the scorers’ level of interest in reading a journal article about the research question on the card. At the end of the five rounds, the scores on each card were summed into a number ranging from 0 to 25. The cards were then collected at the end of the activity and informally coded and sorted into broad categories by the four authors.

The methods and the results from the crowdsourcing activity are by no means scientific nor broadly generalizable; however, they do represent the views of the majority of the attendees at the 2014 E-Portfolio Forum whose questions as faculty, staff, administrators as well as vendors, are aligned with many of the interests and concerns of the ePortfolio community more extensively. Table 1 lists the categories ranked from highest to lowest levels of interest together with example questions.

Of the 14 topics that emerged from the categorization of the 156 questions that were collected, the top three areas of interest were Institutional, Faculty, and Student Buy-In and Adoption (22%), Assessment (18%), and Student Learning (17%). The latter two topics were purposely broad and additional exploration of the nuances of these questions is needed.

When individual questions were ranked by score, the categories that represent possible emerging areas of research interest are Retention/Transfer and Career/Post-Graduation ePortfolios. Examples of the questions that received the highest scores are below:

- In what ways can reflective ePortfolios affect student persistence/retention? (Category: Retention/Transfer; Score: 24)
- Do employers value ePortfolios as a substitute for traditional resumes? How do we build better reflective authors (ePortfolio students)? (Category: Career/Post Graduation ePortfolios; Score: 23)

- Are there institutional data that prove that ePortfolio use leads to higher retention/graduation rates? (Category: Retention/Transfer; Score: 23)

Closing Plenary

During the closing plenary session, Watson (2014) began by reviewing the learning theory in support of ePortfolios. He suggested that reflection, feedback, social learning, knowledge integration, and cognitive processing were key among the reasons why we have confidence in the efficacy of ePortfolios; however, he focused the remainder of his talk on questions regarding the evidence in support of these theoretical connections between ePortfolios and various student outcomes.

General Findings from Survey of Published Research Literature

Through two lenses, Watson considered research regarding ePortfolios. First, he shared the literature review work of Bryant and Chittum (2013). They conducted a thorough review of the literature published in peer-reviewed journals between 1996 and 2012 considering ePortfolios. Four general categories emerged across 118 articles with the majority of the publications being descriptive or self-report in nature. Approximately 15 percent ($n = 18$) provided empirical data considering student outcomes, and only two of the 118 “utilized valid and reliable measures in addition to a comparison/control group” (p. 193). While a diversity of research strategies have been employed to examine ePortfolios, Bryant and Chittum found that very little research had been published that meets the most rigorous standards expected of educational research.

Landscape, Limitations, and Possibilities

Watson also provided insight into the range of submissions to the International Journal of ePortfolio since its launch in 2011. Looking at the totality of all submissions to the journal, the most common methodologies employed by authors included case studies, focus groups, surveys, and rubrics. Many of the most popular topics mirror the learning theories that have led a number of practitioners to ePortfolio. They include reflection, assessment, rubrics, feedback, career portfolios, technology narratives, and integrative learning, and the results have typically provided case narratives, self-reported attitudinal data, self-perceptions, and qualitative student experiences with ePortfolios.

Looking across the range of submitted manuscripts, many suffer from small sample sizes, a lack of rigor

Table 1
Crowdsourcing Categories Ranked According to Interest and Example Research Questions

Category	Example Research Questions
Assessment	<ul style="list-style-type: none"> How do you balance promoting and demonstrating student learning with getting solid institutional data from ePortfolios?
Student Learning	<ul style="list-style-type: none"> Do data support the notion that a campus-wide ePortfolio initiative is worth the effort and money? What kinds of support can help students articulate for themselves and others what they have learned and how they can transfer that learning to other situations in the future? How can ePortfolios enhance the civic learning and citizenship skills of students?
Career/Post Graduation ePortfolios	<ul style="list-style-type: none"> Do employers value ePortfolios as a substitute for traditional resumes? How do we build better reflective authors (ePortfolio students)? Will ePortfolios have an enduring value to students beyond graduation?
Buy-in/Adoption – Institutions/Departments	<ul style="list-style-type: none"> What are the longitudinal effects of ePortfolio use on competencies post-graduation? How do ePortfolios affect/help create institutional change/learning? How can you create a culture of ePortfolio where one doesn't exist? How do "we" (students/faculty) [move] from a paper portfolio state of mind to an "e" portfolio state of mind?
Retention/Transfer	<ul style="list-style-type: none"> Are there institutional data that prove that ePortfolio use leads to higher retention/graduation rates? What happens when students carry evidence of learning across institutional boundaries? Can institutions handle this?
Buy-in/Adoption - Faculty	<ul style="list-style-type: none"> What methods are most effective at engaging faculty in the ePortfolio process? Does the term "ePortfolio" encourage or discourage faculty interest/participation in "ePortfolio"/learning-centric projects?
Buy-in/Adoption - Students	<ul style="list-style-type: none"> How do we get students interested/invested in doing ePortfolios? Does the use of ePortfolios in a class enhance student motivation? What audiences for student folios are most powerful as incentives for students to take their folios seriously and work on them over time - even years?
Reflection	<ul style="list-style-type: none"> How best to motivate both faculty and students to embrace reflective learning within the context of ePortfolios, so as to create a campus-wide culture of reflective learning? What incentive would result in authentic responses to ePortfolio reflection prompts? How do ePortfolios support/help develop reflective, metacognitive capacity?
Integrative Learning	<ul style="list-style-type: none"> To what extent can an integrative knowledge (e)Portfolio process increase students' confidence, security and ownership in their sense of self and identity? Designing a new curriculum, how can we use ePortfolios to help students synthesize their learning outcomes?
How to Build	<ul style="list-style-type: none"> What is the role of visual narratives and/or visual and written narratives in ePortfolios? Does it help address "audience interference?" (see: film, photography, archival image/footage) How do you help students understand the different audiences and purposes for portfolios?
Scalability	<ul style="list-style-type: none"> What should we be aware of when scaling/expanding our ePortfolio programs? Ex: ease of use How do you expand an ePortfolio program beyond initial, dedicated faculty?
Identity	<ul style="list-style-type: none"> Can ePortfolios help bridge the gap that first-generation college students often experience between their home-culture (of their parents and relatives) and the campus culture (that they now attend)? How much can ePortfolios affect students' dispositions and how much do dispositions affect the portfolio?
Technology	<ul style="list-style-type: none"> Would students become more engaged with their ePortfolio if they were available on their mobile devices with more social spaces for feedback, peer review in real time? Which is more successful - strictly administered platform or free-form, student-initiated ePortfolios? What will link all ePortfolios regardless of platform for the good of humanity?
General Education	<ul style="list-style-type: none"> Do ePortfolios produced to assess general education specifically reveal a different level of learning than those produced for program? i.e. Which might be better options to show student learning? How can ePortfolios be used on our campus to effectively (accreditation, faculty/student buy in) assess student learning of general education?

associated with measurement reliability and validity, and/or a lack of randomization. As a result, the findings of these studies often have limited applicability beyond their own context, and may not be true in different settings. Further, some findings may not be entirely true within their own contexts. For example, we know that students do not always prefer the instructional methods that result in the greatest learning gains (Steinberg, 1989), and thus self-reports of learning gains lack the reliability that measurement provides.

In social science research, it is true that each well-designed study provides additional insights into the phenomenon under consideration, and there is much value in case studies, self-reported data, and rich narratives of experience; however, given the challenges to generalizability found within the current corpus of peer-reviewed ePortfolio research, it is now time to broaden the scope of current research to include methodologies, such as quantitative and qualitative methods as well as mixed methods approaches that

enable practitioners to confidently adopt practices in their own contexts with an expectation of similar gains across intended student outcomes. This leads to the following call.

The “Call” Moving Forward

- How do we move beyond perceptions and attitudes to explore how ePortfolios can be used to document evidence of student success and achievement of learning outcomes?
- How do we operationalize the questions that emerged from the crowdsourcing exercise and design thoughtful and comprehensive research studies?
- How can we strengthen ePortfolio research through the use of both quantitative and qualitative research methodologies as well as mixed methods and longitudinal approaches?
- How can the triangulation of data from multiple sources (e.g., individual institutions as well as initiatives such as the National and Community College Surveys of Student Engagement) help us tell a stronger and compelling story about the impact of ePortfolios on student learning?
- In order to truly evaluate impact, how can we engage and build partnerships with colleagues in student affairs, employers, and other stakeholders in the broader ePortfolio and higher education community?

The ePortfolio community is diverse – faculty, staff, instructional designers, educational technologists, students, researchers – but we have a shared interest in these topics and advancing the field of ePortfolio to support student learning. As the ePortfolio discipline/field has matured and as new people join, there is a need to move beyond case studies and anecdotal stories towards more rigorous methodologies and data across individuals as well as institutions and perhaps over time. This may lead to more projects, such as cross-institutional collaborations like the Connect to Learning project, consortia such as the Inter/National Coalition on ePortfolio Research, and organizations such as AAC&U, AAEEBL, and the ePortfolio Community of Practice that provide venues for both face-to-face and virtual interactions and community-building.

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HELEN L. CHEN, PhD, is a research scientist in the Designing Education Lab in the Department of Mechanical Engineering and the Director of ePortfolio Initiatives in the Office of the Registrar at Stanford University. Helen is a co-founder and co-facilitator of EPAC, an ePortfolio community of practice (<http://epac.pbworks.com>). She works closely with Association of American Colleges and Universities as a faculty member for the Institute on General Education and Assessment and is the Co-Director of Research for the Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL). Helen serves on the editorial board for the International Journal of ePortfolio and has research interests in the areas of

ePortfolio pedagogy and reflective practices in general education, the disciplines, and co-curricular experiences and how they might inform a redesign of the academic record. She and her colleagues Tracy Penny-Light and John Ittelson are the authors of *Documenting Learning with ePortfolios: A Guide for College Instructors* (2011, Wiley).

C. EDWARD WATSON, PhD, is the Director of the Center for Teaching and Learning at the University of Georgia. He is also the Executive Editor of the *International Journal of ePortfolio*, served on the planning committee for AAC&U's 2014 E-Portfolio Forum, and is a board member of the Association for

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ePortfolios and Audience: Teaching a Critical Twenty-First Century Skill

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This article reports on a three-year investigation into how and to what extent ePortfolios sponsor teacher and student learning about audience in first-year writing classes at a mid-sized research university. Through interviews with students and instructors and detailed analysis of students' ePortfolios, we found that, more often than not, the audience for ePortfolios is multiple. We argue that the ability to craft compositions that successfully negotiate multiple audiences' needs and expectations is a critical twenty-first century skill, yet the concept of audience is under-investigated and under-theorized in ePortfolio research. Our study provides evidence that working with ePortfolios shifted the ways that students and instructors engaged with the concept of audience. We observed that many student ePortfolios at least gestured toward invoking multiple audiences. We further observed considerable variance in how successfully students negotiated the needs and expectations of these audiences, often experiencing a phenomenon we call "audience interference." We identified three key rhetorical moves that largely determined the success of the ePortfolio in negotiating multiple audiences' needs and expectations: intentional design of structure and navigation; contextualization of content and artifacts; and flexible use of voices. We conclude by suggesting pedagogical implications of these findings.

Who is the audience for a student ePortfolio? The answer to this question might seem straightforward: it's the teacher, or an evaluator, or a potential employer, or the student herself. But a moment's reflection reveals that the audience for student ePortfolios is usually, perhaps always, *multiple*. If a student composes an ePortfolio in a classroom, her teacher is obviously a primary audience. But since reflection and learning are key goals of ePortfolio pedagogy, the student is also a crucial audience for her own work. If the ePortfolio is part of an evaluation, then evaluators (e.g., program administrators, accreditors, employers) comprise yet another audience. And if teachers encourage students to identify an external audience for their ePortfolios, as do many of the teachers in the study we report on here, still another audience comes into play.

The ability to craft compositions that successfully negotiate multiple audiences' needs and expectations is a critical twenty-first century skill. Many, perhaps most, forms of web-based writing—think of virtually any public website—provide different kinds of information and different forms of engagement to different readers. The multimodal and digital affordances of ePortfolios provide a unique opportunity to teach this skill because they can, and often should, offer different experiences to different readers/viewers. Consider how Yancey, McElroy, and Powers (2013) described their individual reading experiences of a student ePortfolio:

Reading Kristina's ePortfolio involved, first, making a set of choices, some of which were . . . well, to not read. Beginning to review the portfolio, we first decided, each of us separately, which page to click first, then which link to click second—an act that could simply have taken us back to the portal—then which link to click third, and so on.

Upon encountering a text, we needed to decide what to do with it. Would we, for example, click the contact screen and complete the email form so that we were both reading and writing? Would we download print texts—which ranged from the one-page resumé to the multi-page research project—to our computers and read those, and if so, would we read them through completely and carefully, or would we skim them, or would we . . . quit in medias res? Would we link to a video and not read it, but rather watch it? Would we link to a separate web page and navigate it? (para. 2-17)

Yancey et al. (2013) found that Kristina's ePortfolio offered a "plurality of gently guided paths" (para. 48). The composer shapes several possible reading experiences and invites her readers/viewers to collaborate with her in making meaning. Provocatively, Yancey et al. (2013) suggested that "perhaps a successful portfolio . . . lies more in showcasing ability to anticipate and satisfy multiple audience needs . . . than in pinpointing a targeted audience for reflection and display" (para. 49).

Yancey et al.'s (2013) work invites further investigation into the construct of *audience* for student ePortfolios. This article answers that call by reporting on a study of how ePortfolios affected teachers' and students' considerations of audience in a first-year college writing program. Drawing on teacher and student interviews as well as analyses of student ePortfolios, we find that while ePortfolios provide an exciting opportunity to help students imagine and write for multiple audiences, they also have the potential to confuse and frustrate students and to lead to confused and frustrating ePortfolios. Based on the results of our study, we call for teachers to go beyond general

audience awareness in ePortfolio pedagogy to include instruction that helps students successfully negotiate multiple audiences.

Literature Review

The concept of audience has been central to the field of rhetoric and composition at least since Aristotle taught his students how to appeal to their hearers. In contemporary rhetoric and composition theory, audience is theorized as a constituent of the rhetorical situation, depicted in Figure 1, a poster page published by the flagship journal of the field, *College Composition and Communication*. Though scholars have theorized the rhetorical situation in multiple ways (e.g., Bitzer, 1968; Swales, 1990), audience has remained a central component. Indeed, these scholars have theorized various kinds of audience, including invoked, addressed, and involved (Ede & Lunsford, 1984, 2009; Lunsford & Ede, 1996); imagined, intended, real, implied, ideal, and more (Clark, 2003; Ong, 1975; Park, 1982; Reiff, 1996). Research in composing processes conducted in the 1970s and 1980s established that experienced writers use their understanding of their (potential) audience both to generate their ideas and to shape their compositions (National Council of Teachers of English, 2011). More recent work theorizes the complexity and multiplicity of audiences, including and especially in digital environments (Reiff, 1996; Weiser, Fehler, & Gonzalez, 2009).

Despite this long history of research and scholarship on audience, the ePortfolio community is just beginning to devote significant attention to audience as a theoretical construct. Perhaps because we are still learning what it means to think of ePortfolios as a distinct genre—that is, compositions unto themselves, rather than containers for other compositions—audience, until recently, has largely functioned as a ubiquitous absent presence in the ePortfolio literature.

For instance, in Cambridge, Kahn, Tompkins, and Yancey's (2001) collection *Electronic Portfolios: Emerging Practices in Student, Faculty, and Institutional Learning*, audience is mentioned by many contributors, but it is not theorized or discussed in significant detail. In discussions of student, faculty, and institutional portfolios, purpose is routinely privileged over audience, and advice regarding the latter tends to be general and commonsensical: essentially, to keep one's audience in mind while working on one's portfolio. A few contributors (Hamilton, 2001; Kelly, 2001; Ketcheson, Tompkins, & Yancey, 2001; Yancey, 2001) mentioned that the non-linear affordances of hypertext allow composers to design ePortfolios for multiple audiences and point to the wisdom of involving potential campus and community audiences

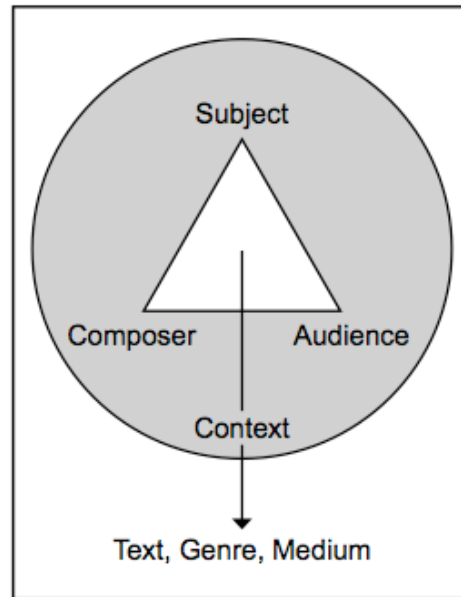
in the development of ePortfolios, and a couple more (e.g., Kelly, 2001; Tompkins, 2001) noted audience-related challenges ePortfolio composers face (writing honestly about pedagogical shortcomings and negotiating the competing demands of colleagues and general readers, respectively). However, the book includes no theoretical discussion of audience as a concept. Similarly, none of the chapters in the collection *Electronic Portfolios 2.0* (Cambridge, Cambridge, & Yancey, 2009) took up audience as a central concept. The term "audiences" appeared in the index only in connection with ratings (one page listed) and "thinking sheets" (two pages listed). Likewise, only two chapters of the 51 in Jafari and Kaufman's (2006) handbook examine audience explicitly (Niguidula, 2006; Price, 2006). The attention to audience in these chapters is limited: Price (2006) raised questions about purpose and audience in the context of shifting from print to electronic portfolio, rather than reporting on a study on audience, and Niguidula (2006) concluded that purpose and audience are important, but does not discuss in detail how to think about these concepts.

Price's (2006) chapter is focused on Spelman's first-year writing ePortfolio. Other studies emerging from college writing programs (including several studies conducted in connection with the Inter/National Coalition for Electronic Portfolio Research, including Northern Illinois, Cohort 1; University of Washington, Cohort 1; University of Georgia, Cohort 2; University of Denver, Cohort 5) focus on reflection, revision, identity, and assessment rather than audience (Desmet, Miller, Griffin, Balthazor, & Cummings, 2008). This relative paucity of explicit attention to audience, even by rhetoric and composition scholars, is curious because the limited research that has been done on ePortfolios and audience makes a strong case for its significance to ePortfolio composers. Wall and Peltier (1996) found that "by 'going public' with their electronic portfolios, students transformed their school-bound ideas of audience, fostered their own sense of community extending beyond the classroom, and renegotiated the traditional terms of ownership of student writing" (p. 207). Similarly, Cambridge (2008) found in a study of ePortfolio Minnesota that

when portfolio authors have a strong sense that these real audiences [peers, faculty, counselors, employers, family and friends, etc.] find their portfolios interesting and useful, they tend to also see eFolio as having a more profound impact on their lives as wholes. (p. 1238)

In a study of digital portfolios in a range of K-12 schools, Niguidula (2006) found audience to be a critical consideration for ePortfolio composers: "as students and teachers become clearer about the purpose

Figure 1
Audience is Theorized as a Constituent of the “Rhetorical Situation”



(National Council of Teachers of English, 2010, p. 1)

and audience of their school's digital portfolio, they can better understand how to build and read the portfolio's contents" (p. 496). While Niguidula (2006) admitted that this does not seem like a groundbreaking insight, he demonstrates that students often struggle with audience for their ePortfolios because their audience is only vaguely described to them, the audience is too far in the future (e.g., potential employers), or they are asked to write to multiple audiences with different, and perhaps even conflicting, expectations.

Cambridge (2010) and Niguidula (2006) also pointed to the tension that runs through much of the ePortfolio literature between "learning ePortfolios" and "assessment ePortfolios." Barrett and Wilkerson (2004) claimed that the purposes of these ePortfolios are irreconcilable: that positivist portfolios designed to assess learning outcomes are fundamentally different from constructivist portfolios, which are designed to allow learners to construct meaning from their own perspectives. By contrast, Cambridge (2010) and Batson (2011) posited that these purposes, while different, are not necessarily contradictory. Both positions recognize the importance and purpose, and therefore audience (i.e., self vs. evaluators), but again the former term takes precedence in these debates and audience is left under-theorized.

Recently, in the pages of this journal, Turns, Sattler, Eliot, Kilgore, and Mobernd (2012) discuss the role of audience in preparedness ePortfolios in engineering. Unlike much of the previous work on

audience, this article treats audience as complex and multiple:

Preparedness is interestingly ambiguous with respect to audience. In this work, we invite students to think about their audience—who they would like to convince with their arguments. The attempt here is to help students transcend the school context that they are in and go beyond thinking of the educator as their implied audience. By bringing the issue of audience into the open, we also have a chance to talk about the types of claims that would interest a specific audience and the types of evidence that the audience would find appropriate and engaging. (p. 5)

Another robust treatment of audience appeared in the inaugural issue of the *International Journal of ePortfolio*. In "ePerformance: Crafting, Rehearsing, and Presenting the ePortfolio Persona," Ramírez (2011) wrote:

The "audience" for any given ePortfolio may not be readily located or defined. Because ePortfolio invites asynchronous exchanges and promotes sharing through wikis or web-based interfaces, its audience is variable and potentially infinite. A student may perform multiple roles for multiple audiences, as s/he does in everyday life. (p. 1)

Ramírez (2011) argued that the unique affordances of ePortfolios allow students to perform multiple roles, simultaneously writing for themselves to enhance their own learning, and performing for multiple audiences, including but not limited to their professors. She usefully imagined ePortfolios as stages on which “[d]igitized artifacts may be assembled into the virtual environment much the same way that a theatrical setting must be constructed, costumes built, or properties introduced” (p. 3). At the heart of Ramírez’s (2011) notion of *ePerformance* is “productive interactivity with audiences who actively influence process, content, and outcomes” (p. 8).

In this article, we build on Ramírez’s (2011) conception of ePortfolios as spaces in which students negotiate multiple audiences—self, teacher, and a potentially infinite range of others—in a single composition. Our study demonstrates that ePortfolios can be a valuable tool for promoting this composing practice, which is critical in a digital, networked world. At the same time, it shows that students must be taught to compose in this way; it does not just happen. In fact, the use of ePortfolios in the absence of a rich conception of audience might serve to confuse as much as illuminate audience for students. For this reason, a robust conception of audience is necessary not only for the ePortfolio community, but also for teachers and students.

The Study

This study sought to understand how and to what extent ePortfolios sponsor teacher and student learning about audience in first-year writing (FYW) classes. This research question was inspired by an inquiry group of writing instructors who had introduced ePortfolios into their teaching practice while the curriculum they were teaching in was undergoing a shift in focus from traditional academic discourse to a broader, rhetoric-based approach in which students write for multiple purposes and audiences in various media. Instructors felt audience was a particularly important consideration for FYW in light of the pending curricular changes.

Case Study Approach

We selected a qualitative design using a case study strategy to capture the complex and contextual nature of the practice we explored. Our goal was to develop what Creswell (2009) calls a *holistic account*, or the development of “a complex picture . . . reporting multiple perspectives, identifying the many factors involved in a situation, and generally sketching the larger picture that emerges” (p. 176). According to Yin’s (2008) definition, the case study approach is appropriate for studying phenomena that are

inseparable from the context in which they occur and that include many more variables (e.g., individual instructors, different courses, assignments, pedagogical practices) than data points (number of participants). Our research was conducted within a writing program with specific values, an open-ended approach to using ePortfolios, and a diverse group of students—factors we judged inseparable from the experiences of the participants. Stake (2005) explained that qualitative case researchers connect “ordinary practice in natural habitats to a few abstractions and concerns of the academic disciplines” (p. 448), with organizing themes clarifying the meaning of the case. By identifying themes in each of three data sources, we were able to weave together a narrative explanation of the case that will enable readers to identify transferable lessons (Stake, 2005).

Context

We conducted our research within a writing program at a mid-sized, private U.S. research university. The overarching goal of the program is to help students develop confidence and competence in writing for academic, professional, and public purposes and audiences. The program offers two required writing courses—First-Year Writing, taken in the freshman year, and Advanced Writing in the Disciplines, taken near the midpoint of a student’s course of study.

Our research focused on First-Year Writing (FYW), process-oriented, workshop-style courses designed to engage students in academic and public discourse. Specifically, this study focused on teachers and students in the Introductory Writing course, the first semester of a two-semester “stretch” version of FYW, housed within the university’s General Studies Program (GSP). The GSP is a one-year program designed to meet the needs of students who benefit from support services including personalized advising, small classes, and peer tutoring. In recent semesters, the program has enrolled significant numbers of second-language writers. Our study focused on this specific student population because all of the teacher participants who volunteered for the study were teaching Introductory Writing in the GSP in the Fall of 2011, when we collected our data.

At the time of our study, the writing program was undergoing significant curricular change. The instructors involved in this study were positioned in various ways vis-à-vis this shift. Some were longtime teachers in the program and were wrestling with how to make sense of the changes. Others were consummate pedagogical innovators and had been actively involved in the conversations that led to the shift. Still others were newer to the program and were not steeped in its values and traditions. What they had in common is that

they all volunteered to participate in pedagogical experimentation with ePortfolios while the new program focus was being crafted and implemented.

The assignments instructors gave their students for producing ePortfolios spanned a spectrum. On one end were assignments that resembled the comprehensive end-of-semester print portfolios historically required by the program. On the other end, instructors identified a set of process and product requirements but gave students considerable freedom in designing their ePortfolios as a stand-alone project. Somewhere in the middle of this spectrum, teachers asked students to design ePortfolios as a presentational space for completed work after they had generated material related to one or two projects. Some teachers asked students to complete multiple kinds of ePortfolios throughout the semester.

Data Collection and Analysis

Interviews. In fall 2011, we conducted semi-structured interviews with six Writing Program instructors to ascertain whether or how working with ePortfolios had influenced their teaching of audience in FYW. We also visited the classes of five of these instructors and asked for student volunteers to participate in on-the-spot interviews. We interviewed 18 students to ascertain how they conceptualized the audience(s) for their ePortfolios and how they considered those audiences as they constructed the portfolios. The two PIs independently analyzed all interview transcripts. We each identified themes in the data and, through discussion, reached consensus on five primary findings in the instructor interviews and four findings in the student interviews. We also identified six categories of evidence of audience awareness described by the instructors, which we later used in our analysis of student ePortfolios.

ePortfolios. At the end of the Fall 2011 semester, students using ePortfolios in writing classes were invited to submit their work to a program repository for purposes of program review and research. Forty-three students submitted work to the repository. We briefly reviewed all the submitted portfolios and categorized them into three different types: process portfolios, project portfolios and reflective/showcase portfolios. We then randomly selected six portfolios of each type to analyze.

We analyzed these 18 ePortfolios for evidence of audience awareness, using a reading protocol based on Lunsford and Ede's conception of audience as invoked, addressed, and/or involved (Ede & Lunsford, 1984, 2009; Lunsford & Ede, 1996) and six categories of evidence of audience awareness drawn from the instructor interviews: home page, structure/navigation, imagery/media, individual artifacts, tone/voice, and

reflective writing. We created an online form for data input and completed the form multiple times for each portfolio, once for each category of evidence. The form populated a spreadsheet, enabling us to sort the data across multiple categories.

We worked both individually and collaboratively when analyzing portfolios and sorted the spreadsheet entries in four different ways: by type of portfolio, by location of evidence, by kind of audience, and by audience role. Each PI examined the data in two of these configurations, tallying responses to categorical questions and identifying themes. We compared our individual analyses and, through discussion, reached consensus on themes.

Findings

In order to provide readers with the "story" our research uncovered about how ePortfolios are being used in this writing program, we present in this section an overview of all of our study findings; our Discussion section focuses on the last finding, which relates to students writing for multiple audiences.

Finding 1

Though audience traditionally has played a limited role in the program's first-year writing courses, ePortfolios have prompted significant shifts in the teaching of audience.

All instructors reported that audience had previously played a limited role in their teaching of first-year writing and that trying to teach audience to first-year writers presented challenges. As one instructor stated, "a paper or an essay was written to be graded, and that's that." Though some of the instructors asked students to consider their classmates as an audience, they acknowledged that students did not always take to this understanding of audience. Some mentioned that they discuss "the general reader" with students, but these instructors were quick to identify this as an "artificial" construction. Others identified their own struggles in thinking about audience as an impediment to teaching it. As one instructor put it: "I struggle with the sense of what the audience is for all the writing that happens in freshman composition, because I'm not convinced that there is a definite audience."

Instructors also reported that the use of ePortfolios had brought about specific changes in their teaching of audience. They reported spending more time in class discussing audience choices. Several instructors talked about "contextualization," or the need to provide accurate and sufficient information for uninitiated readers/viewers to understand what the writer is writing about. These instructors also talked about guiding

students to think about the experience of their ePortfolios, asking them, for instance, “When you go to a site that you can navigate easily or one you can’t navigate, what’s the difference in your experience?”

Instructors also reported placing greater emphasis on peer review in their courses and a stronger focus on using peer review to heighten audience awareness. Other instructors described a good deal of sharing of ePortfolios within and in one case across classes.

A few instructors have used ePortfolios as an opportunity to retool their entire pedagogical approach, including the kinds of writing they ask students to do. These instructors are moving away from teaching essays with clearly separated drafts and revisions and toward projects on which students are continuously working, providing the instructors with progress reports as they design and redesign their ePortfolios. They are making “what it means to compose in digital environments” an explicit focus of instruction, as one instructor explains:

[I tell students,] “You’re no longer writing a paper or an essay. You are creating, conceptualizing, planning, composing—from soup to nuts—a writing project that is enacted as a web site . . . [not a] paper to be graded [but rather] something to be . . . experienced.”

Finding 2

Four distinct types of ePortfolios have emerged in first-year writing classes: process, project, showcase, and reflective.

Our analysis of ePortfolios confirmed our initial observation that students produced different types of ePortfolios, distinguishable by their purpose and audience, in response to different assignments:

- *Process portfolios* documented the process of completing a single project, the product of which was most commonly an alphabetic essay. Process portfolios included the final product as well as a selection or comprehensive collection of process artifacts (drafts, writer’s notes, reader responses, etc.) and a final reflection on the project.
- *Showcase portfolios* were similar to traditional, end-of-semester portfolios. Their purpose was to showcase the student’s body of work produced over the semester and, usually, to present an argument about the student’s achievement. These portfolios included polished pieces of writing, selected process artifacts, and reflective writing about the student’s learning.
- *Reflective portfolios* also considered the students’ work over the course of the semester,

but had a distinctly self-evaluative purpose. These portfolios were produced in response to a particular assignment that asked students to define the standards by which they wanted their work to be evaluated and then to analyze their work according to those standards. Some, but not all, of these portfolios used work samples or excerpts as evidence of claims.

- *Project portfolios* were a new format in these writing courses in which the ePortfolio itself became the platform for the writing project. In other words, students were asked to develop a type of web site rather than a print essay. These portfolios also typically included elements of process work (drafts, work plans, peer reviews, reflections).

Finding 3

ePortfolios are shifting instructors’ and students’ attention to audiences other than the instructor.

Instructors reported increased audience awareness among students using ePortfolios. In particular, they observed students paying more attention to the ways in which multimodal/multimedia texts are constructed to appeal to audiences both within and beyond the classroom. Some instructors described ePortfolios as a tool for displacing the teacher as the primary audience for student writing. As one instructor put it, the question “what is somebody else going to do with this?” became a focus of instruction and of peer review. In short, instructors reported that teaching with ePortfolios had shifted the conceptual focus of their FYW courses from writing to be evaluated by a teacher to writing to be read by other audiences.

Most students, however, identified their teacher and perhaps classmates as the audience for their work. When students did conceptualize an audience beyond the classroom, that audience was most often broadly defined: for example, as a “general audience” or “anyone interested in the topic.” When students identified external audiences, those audiences often remained close to the classroom (e.g., students or teachers). Few students identified multiple audiences for their ePortfolios. One student articulated the challenge of writing for both the teacher and an external audience:

It is harder, because you have to make it . . . professional enough for the teacher to get a good grade, but if it’s going to be a web site, it also has to be accessible enough to most people.

Finding 4

Although instructors perceived that students had mixed success writing for audiences with ePortfolios,

both instructors and students identified a wealth of examples of choices students made with audience in mind.

Instructors noted that only some of their students composed effectively for audiences other than the instructor. They described students simply uploading print texts; pasting and uploading the same texts; posting images with no apparent connection to the context of pages; linking various media objects but not discussing them; and generally not thinking about what a reader/viewer would need to interact productively with the ePortfolio.

However, when asked where they saw evidence of audience awareness in their students' ePortfolios, instructors offered a wealth of examples. Indeed, both instructors and students identified many examples of choices students had made while constructing their portfolios in order to meet the needs of an audience, and we found alignment among the examples each group offered. Table 1 compares the categories and examples of evidence we identified in the two data sources.

Finding 5

Audiences beyond the classroom largely remained imagined, as few students took the step of publishing their work beyond the classroom.

The ePortfolio system (TaskStream™) offered students several levels of permissions and privacy for their work. Most instructors required students to submit their work to them, and in some cases their classmates, through features that kept the work private. While the system also allowed students to publish their work on the Internet, with or without password protection, many students were unaware of this feature or unsure whether or not they had published their work. A third of the students stated that they would not share the work beyond the class, either because they lacked confidence in their writing or didn't think anyone beyond the class would find the work interesting. Some said they might publish an ePortfolio if their confidence increased or if they improved the work. Those who said they had shared or would share their work beyond the class commonly said they would do so with friends and/or family, not the identified audiences of the work.

Finding 6

While there is evidence that many students had multiple audiences in mind as they composed, their ePortfolios reflect varying levels of success in negotiating the needs and interests of multiple kinds of readers.

Ede and Lunsford's (1984) theoretical framework for audience allowed us to consider a range of potential

audiences for student work, including a mass audience: teachers, friends, critics or evaluators, co-workers, themselves, and others. Across all types of portfolios, we identified the teacher and a mass audience as by far the most common audience roles. This finding is consistent with our interview data, which suggested that many students continued to identify teachers as their primary audience even when encouraged to target external audiences and that students had only a vague sense of potential external audiences for their work.

The portfolios of students who attempted to write for both their teacher and another audience, mass or not, often exhibited what we came to call *audience interference*, a phenomenon that results when students unsuccessfully attempt to meet the differing expectations and needs of more than one audience in the same ePortfolio. In particular, we found that portfolios exhibiting audience interference lacked the following features:

- intentional design of structure and navigation (i.e., purposeful naming and ordering of the sections to guide readers' experience of the portfolio);
- adequate contextualization of content and artifacts (i.e., sufficient information for readers to determine the purpose of the materials included in the portfolio); and
- flexible use of voices (i.e., appropriate shifts in tone and perspective to account for different readers' expectations).

By contrast, composers of portfolios that successfully negotiated multiple audiences thoughtfully attended to these same features, inviting different readers to have different experiences of the portfolio by offering them guidance in how to understand, experience, and interact with the portfolio.

Discussion

The introduction of ePortfolios into the first-year writing program created both opportunities and challenges for instructors and students with respect to teaching and learning about audience. To be sure, ePortfolios prompted the instructors—and, as a result, the students—in this study to devote more attention to audience than they otherwise would have. As digital, online compositions that could be easily circulated to a range of potential audiences inside and outside of classrooms, ePortfolios opened up innumerable audience possibilities. At the same time, these ePortfolio affordances did not automatically translate into robust, diverse, audience-aware teaching and writing. Teachers who struggled to incorporate audience into their pedagogies in paper-based

Table 1
Categories of Evidence of Audience Awareness

	Instructors (Reported finding evidence of audience awareness in these locations)		Students (Reported making choices about the following with audience in mind)
Use of visuals	Choice of visuals Consideration of composition Intersection of visual and written	Media	Visuals make work more accessible Included a music clip to listen to while viewing slideshow of images
Contextualizing	Contextualizing work Prefaces/intros to bring reader into portfolio	Explanation and contextualizing	Writing to make work understandable if reader had not read original text Adding quotes so reader could relate to original text
Design/structure /arrangement	Talking about use of the page, design Expecting links Discussing design and arrangement in terms of navigation	Structure/design	Designing for non-linear reading Defining main idea on home page Including section to define terms Using quotations to introduce sections
Relationships between and among artifacts		Theme/metaphor	Building each project around a theme Using metaphor for structure (i.e., running a race, using remote control) Using imagery of diverging/converging paths
Tone/voice	Using intimate or formal language Using second person Use of multiple languages	Tone/voice, language/ vocabulary	Trying to be fun, entertaining Using “we”; using accessible language Using quirky titles, plays on words
Direct address of reader/ viewer	“Exhortation to participate” Asking questions without answering them Giving reader “a turn”	Involving/ connecting to audience	Interviewing people Using popular culture references Exhorting audience to formulate own ideas

environments generally continued to struggle; students who had difficulty writing for anyone other than their teachers in paper-based environments by and large continued to have this difficulty. Indeed, these struggles and difficulties sometimes were exacerbated by the introduction of ePortfolios. For instance, some of the students we interviewed were confused about whether they were supposed to be writing to their teacher, some external audience, or both. On a literal level, some did not know who could access their ePortfolio and who could not.

So while ePortfolios clearly provided the opportunity to compose for multiple audiences, they did not necessarily lead to successful writing of that sort. Still, we found that many students did at least gesture toward invoking multiple audiences inside and outside the classroom. We further observed considerable variance in how successfully students negotiated the

needs and expectations of these multiple audiences. As we analyzed the ePortfolios, we identified three key rhetorical moves that largely determined the success of the ePortfolio in negotiating multiple audiences' needs and expectations: intentional design of structure and navigation; contextualization of content and artifacts; and flexible use of voices. In this section, we explain and illustrate these moves by describing two portfolios in detail.

When student composers failed to use these rhetorical moves, or failed to execute them successfully, we observed what we call audience interference. This phenomenon is exemplified in a project portfolio titled *Why Bother With Miller?* (Figure 2). In this ePortfolio, a student responded to Miller's (2008) essay “The Dark Night of the Soul” and compared Miller's views with those of two other authors, Freire (2008) and Abram (2008). The purpose

Figure 2
ePortfolio: Why Bother with Miller?


Why Bother With Miller? (2)

Home ★ Why Bother? ★ Who to Bother? ★ How to Bother? ★ Directed Questions ★ Bothered Yet? ★
Reflection ★ Brainstorm/Homework ★ Bibliography ★ Progress Reports ★ Project Goals ★

Why Bother With Miller? (2)

Before reading and writing about Paulo Freire, David Abram, and Richard E. Miller, I have never really considered myself a "thinker." Of course i thought about things and tried to configure the things around me but I never truly saw the world for what it was and what it had to offer. What all three of these men, Miller above all have taught me is that you have to really look deeply into yourself and the world around you to realize the opportunity and options this world has to give. Miller writes a lot about the negative things in this world, he believes that there is more we as people could do to better ourselves and the place in which we live. Miller looks at the dark aspects of the world, he talks about school shootings, murders and hate that is a content theme in this world. He asks many questions of his audience to try to get them thinking and for me this has worked quite well.

Richard E. Miller is a very interesting writer who is very blunt about many things. I am a fan of Miller due to his passionate writing however, some of the things he has stated in his writing "The Dark Night of the Soul" have really gotten to me. I



Professor Richard E. Miller, winner of the 2006 Scholar-Teacher Award

of the portfolio was to present the student's engagement with the course readings, using Miller (2008) as a touchstone. The ePortfolio included both product (a website that presents the project content) and process (documentation of how the project was produced). The primary audience, then, seems to be the instructor, and perhaps classmates. At the same time, the project is presented as a website, the student has taken some care to frame it with an accessible theme, and he sometimes writes about and explains the class and the readings in ways his teacher and classmates would already know—all of which suggests that he has in mind an external, perhaps mass, audience as well.

The student seemed to be aware that the needs and expectations of his multiple audiences are not the same, but he did not find a way to address them successfully, and this leads to the phenomenon we are calling audience interference. For instance, his use of structure and navigation was somewhat consistent and accessible. Riffing on a key phrase in Miller's (2008) essay—"Why bother?"—he designed a series of sections: Why Bother?, Who to Bother?, How to Bother?, and Bothered Yet? Within each section were subsections with pages

entitled What Would Freire Say? and What Would Abram Say? The consistency of the structure and the play on the word "bother" invited reading by an external audience and showed that the student considered how a reader might experience the work. At the same time, an external reader would have no way of making sense of the section called Directed Questions, which is sandwiched between the final two "bother" sections, or of the various process-based sections that follow (Reflection, Brainstorm/Homework, Progress Reports, Project Goals; the section Bibliography—a product section—is inexplicably placed between Brainstorm/Homework and Progress Reports). The inconsistencies aside, it is clear that while the student's teacher and classmates will immediately apprehend what the student was doing with the structure and navigation, external readers would find it bewildering.

Further, the student provided little contextualization of the class and the readings. The home page contains a photo of Miller and began with the following text:

Before reading and writing about Paulo Freire, David Abram, and Richard E. Miller, I have never

really considered myself a “thinker.” Of course I thought about things and tried to configure the things around me but I never truly saw the world for what it was and what it had to offer. What all three of these men, Miller above all have taught me is that you have to really look deeply into yourself and the world around you to realize the opportunity and options this world has to give. Miller writes a lot about the negative things in this world, he believes that there is more we as people could do to better ourselves and the place in which we live. Miller looks at the dark aspects of the world, he talks about school shootings, murders and hate that is a content theme in this world. He asks many questions of his audience to try to get them thinking and for me this has worked quite well.

The student did not introduce himself or fully explain his purpose. Again, the student’s teacher and classmates may already know him and understand what he is doing, but an external reader would not.

The student did make some contextualizing moves. For instance, he attempted to explain Directed Questions to an external audience:

At the beginning of class on the chalk board there will be directed questions to the students in this class. We are to answer them to help [the instructor], as well as the audience get a feel for where exactly we are at in our project as well as how we are feeling about our work up to date.

While this information seems clearly directed at an external reader—his teacher and classmates would already know all this—the instructor’s name was used, but she was not introduced. Also, the teacher was distinguished from the audience, but the audience was not specified.

Part of the issue here is inadequate contextualization, but part of it is limited variance in voice. Most of the project was written in first person singular, presented as a response both to Miller and to the questions posed by the student (e.g., “So, who do we bother with these thoughts of reading and writing? Well I personally think we should start with ourselves”). At times, the writer adopted first-person plural, inviting readers to identify with him: “How do we do it? How do we bother these huge problems we have regarding reading and writing?” But then he slipped back into the first person singular, answering his own questions, without ever specifying who those readers are or what they might think about the questions posed. The composer seemed to want to write as an author of an original project, but he is constrained by his student voice.

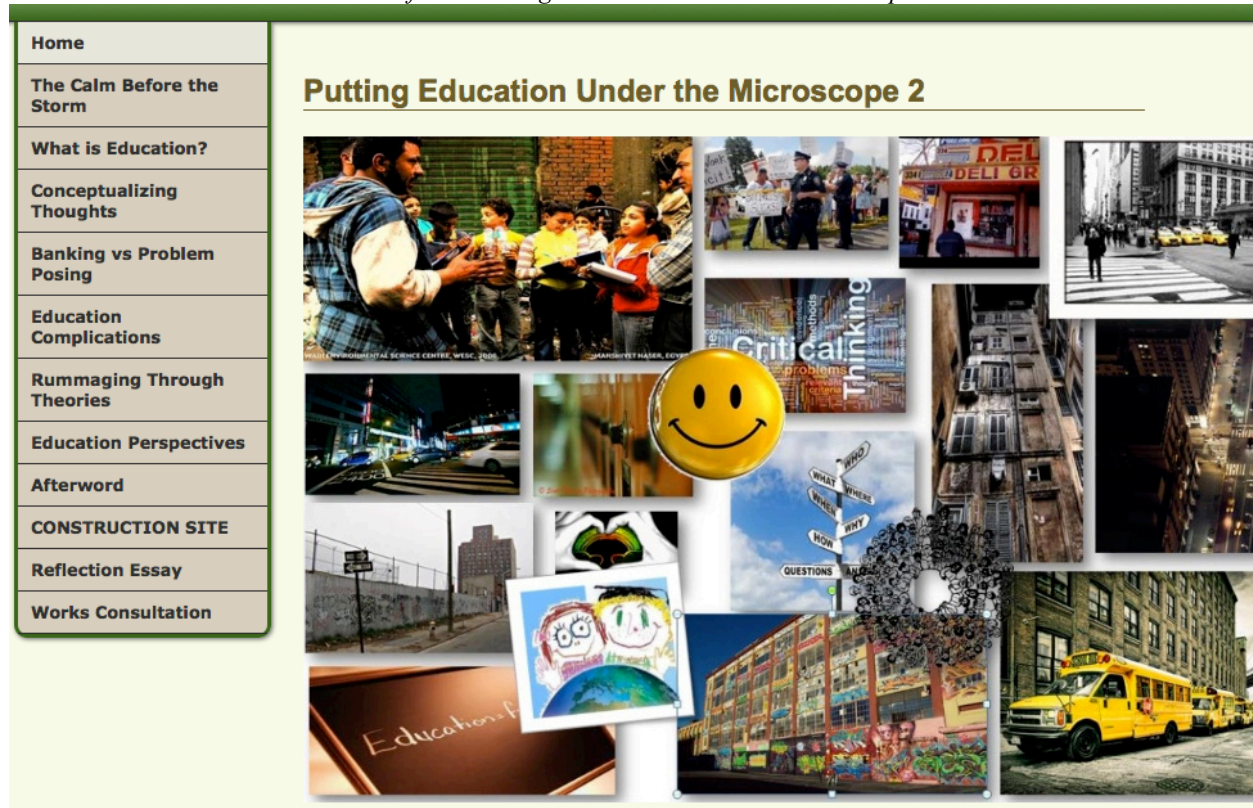
In sum, this student—like many students whose portfolios we read—struggled to meet the differing needs and expectations of his multiple audiences. We see gestures toward this goal, but we also see considerable audience interference.

While we observed numerous instances of audience interference, we also observed successful negotiations of multiple audiences. For instance, in another project portfolio, composed for the same teacher and in response to a similar assignment, a student accommodated multiple audiences by inviting different kinds of engagement with the ePortfolio. Like *Why Bother with Miller?*, *Putting Education Under the Microscope* offered a sustained personal engagement with course readings involving education and invoked both classroom and external audiences. However, the author of *Putting Education Under the Microscope* used more intentional structure and navigation, contextualization, and flexible use of voices to meet the needs and expectations of her various audiences.

This portfolio was structured to function as a book (Figure 3). The image on the front page served as a cover; there was a preface, an introduction, and an afterword; and the student referred to the navigation tabs as a “table of contents.” Most of the individual sections serve as chapters of the book. A quick glance through the contents makes it clear that this personal and social investigation of education was designed as a public text for educators and students (indeed, unlike *Why Bother with Miller?*, it was published to the web).

Readers looking for an extended inquiry into education, then, will experience this portfolio much as they would a book—though a richly multimodal one. (This ePortfolio included 20 images, several of which are compound and two of which are animated; 11 links to videos, including nine movie clips curated by the composer using Windows MovieMaker; and links to sources in the works cited.) Some chapters offered personal narratives focused on the author’s experience of education, others considered social forces that affect education, and still others grappled with competing educational theories. At the same time, readers interested in understanding or evaluating this student’s abilities as a writer and a thinker were offered another way to experience the ePortfolio: through the “CONSTRUCTION ZONE,” which collected documents related to the student’s writing and thinking processes as she composed the ePortfolio—progress reports, brainstorm, and work plans. The upper-case letters were the composer’s: she clearly intended to mark off this section as distinct from the others, presumably because readers who are not interested in her processes may wish to skip it. With this simple move, the composer was able to accommodate the expectations and needs of evaluators without interrupting or confusing the reading/viewing

Figure 3
ePortfolio: Putting Education Under the Microscope



experience of her primary intended audience: educators and students.

In addition to her careful attention to structure and navigation, this student contextualized her work in ways accessible to both classroom and external audiences. Here, for instance, is the beginning of her Preface:

In the introduction of a book a reader is usually revealed to a table of contents. In my e-portfolio introduction you're going to be revealed to a series of ideas that construct my table of contents. In this e-portfolio you will be introduced to several forms of texts such as, Paulo Freire's "The Banking Concept of Education", Richard Rodriguez's "Achievement of Desire" and other forms of literature from authors such as Richard Hoggart, Alexander Kapp, and Malcolm Knowles. I want to reveal "you" the reader to not just different literatures that are focused around the idea of education, but also different types of media that support it as well. Several films such as "Lean on Me" a 1989 production as well as "Dangerous Minds" a 1995 production have great significance to the idea of valuing education. They allow me to portray my ideas visually for you to

grasp and perceive all the information being thrown at you. I want to make you see the many struggles "Education" as a whole has not only endured but has since come to from the moment it began, to its current standards.

While the prose certainly bears markers of a basic writer, we can see that the author was working to establish a context that will allow readers to understand, appreciate, and interact with the materials she presented in the portfolio.

The direct, intimate voice we hear in the passage above is maintained throughout the chapters. While the author mostly used first-person singular, she occasionally used the second-person "you" to invite readers to consider a particular idea or story. She explained in her CONSTRUCTION ZONE, which is addressed to her teacher (and perhaps classmates), that she wanted "readers to inhabit the idea that education is not something that can be taught in one specific way." To explain what she meant by this, the author shifted registers:

Overall Goal For Viewers—Education cannot be acted through any one way . . . or any single

method it must be expressed onto its subjects in a way that gives them room for trial and error. Education is also perceived in different ways how are we to judge how one subject might handle a certain situation that another might excel in? There are not any more problems with the Banking Concept of Education than there are with Problem-Posing or any other synthesized form of education.

This voice, which we might characterize as efficient, declarative, and critically distant, stands in stark but appropriate contrast to the expansive, inquiring, and intimate voice featured in the chapters. This student was able to use voices flexibly to meet her various audiences' expectations and needs.

Why do some students struggle to compose for multiple audiences while others are able to do so more successfully? What are the causes of audience interference? These questions bear further study, but based on our analysis of student ePortfolios and our interviews with students and instructors, we hypothesize the following possible causes:

- The power of prior knowledge. For many students, writing in school has involved writing for teachers exclusively. Even when teachers instruct them to write for an audience other than themselves, many students perform writing for other audiences while viewing themselves, still, as writing primarily or only for their teacher. In addition, students may associate ePortfolios with print portfolios that they have completed in the past, whose audience most likely would have been teachers or other assessors of their work. In both instances, we may be witnessing an inappropriate application of prior knowledge (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010). In any case, in their interviews with us, most students indicated that they were writing for their teachers, even when they had identified an external audience within their ePortfolios.
- Audience as an undifferentiated concept. For many students, especially those unaccustomed to writing for external audiences, the instruction to "find an audience" or "write for your audience" does not help them do these things. The undifferentiated concept of audience may be too broad to be helpful to these students. Without resources for and instruction on identifying or constructing particular audiences, they often default to a general audience or "anyone."
- Misapprehensions about audiences for online writing. This explanation is a particular

instance of the previous one: for many students, placing their writing online means writing for anyone. Ironically, asking students to broaden the potential audience for their writing by putting it online may have the effect of making it more difficult for them to consider and write for external audiences because they believe that online writing is read by anyone and everyone. They must be prompted to think about how writing circulates (or does not) to particular readers.

- Confusion about the status of the circulation of their ePortfolio. Several students did not know whether their ePortfolios were published to the web or not. Some did not know that they could publish their ePortfolios to the web and others did not know that they had the choice not to do so. Students may have been genuinely confused about who could access the portfolios.
- Perceived purpose/audience conflict. Some students were not convinced that anyone outside the classroom would be interested in their writing, particularly when that writing was a traditional academic essay. They considered essays to be school-based genres written for the purpose of evaluating their work, and they found it difficult, sometimes impossible, to re-purpose that writing for external audiences.

Conclusion

The list above offers possible pedagogical and curricular foci for working with students as they compose ePortfolios. We believe that students (and teachers) would benefit from explicitly addressing students' prior knowledge about writing and portfolios; developing a robust concept of audience; exploring who reads online writing and how; clarifying how student writing, including web-based writing, circulates; and attending to the alignment (or misalignment) of purposes and audiences for student writing. We also recommend explicit attention to, and practice in, writing for multiple audiences and creating ePortfolios that offer different pathways for different readers. We believe that assignments and instruction that draw students' attention to the three rhetorical moves we have discussed here—intentional design of structure and navigation, adequate contextualization of content and artifacts, and flexible use of voices—is a promising approach to helping students learn the critical twenty-first century skill of composing for multiple audiences. At the same time, we believe that this study demonstrates the need for rich constructions of

“audience” in the ePortfolio research community. We hope this investigation provides the impetus for further work on this critical concept.

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Unlocking ePortfolio Practice: Teaching Beliefs

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The Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL) annual ePortfolio survey focuses on understanding ePortfolio practitioners' teaching beliefs and practices. The action research reported here extends that survey research to a population of emerging educators (i.e., graduate students in education). In addition to surveying the teaching beliefs of the target population as a comparison with respondents to the annual AAEEBL survey of ePortfolio practitioners, the researchers collected data through a sequence of reflective activities with the students. The belief constructs of the survey – teacher-, learner-, and learning-centered beliefs – maintained face and statistical validity. Graduate students were high in all three belief constructs. They particularly prized learner-centered beliefs and practices. Their reflections reveal barriers to embracing, implementing, and in some cases even comprehending, learning-centered practices.

The Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL) annual ePortfolio survey has attempted to reveal ePortfolio practitioners' teaching beliefs. The action research reported here extends that survey research to emerging educators: graduate students in education who are practicing and advancing or aspiring educators. In addition to the survey of the teaching beliefs of the target population, as compared to the annual AAEEBL survey of ePortfolio practitioners, qualitative data were collected through a sequence of reflective activities to further validate the AAEEBL teaching belief constructs and to explore these research participants' understanding of the constructs and the origins of their teaching beliefs.

Literature Review

The purpose of this section is to link existing theories regarding teaching beliefs to the three teaching belief constructs developed and validated in the AAEEBL annual survey and explored in this study (i.e., teacher-centered, learner-centered, and learning-centered beliefs). In simple terms, the three constructs can be explained as follows: (a) teaching-centered practice involves the faculty member determining what is to be learned and how that learning is to be measured; (b) learner-centered practice involves the faculty member determining what is to be learned but encourages student agency by engaging students more fully in the process of determining answers or solutions as well as affording some leeway as to how evidence of that work might be presented; and (c) learning-centered practice, through which the faculty member promotes agency for learners who join with faculty in determining how the work will be represented and what is necessary to learn. In learning-centered practice, it is presumed that students and faculty will collaborate, employ peer review, network to inform their learning

process, create, and feel personal responsibility for their learning. This emphasis on faculty as learners deviates from previous work on learner-centered pedagogies (e.g., Blumberg, 2008; Rogers, 1969; Weimer, 2013). Reports of data analysis from early administrations of the AAEEBL survey confirmed the relationship between teaching beliefs and teaching practice (Brown, Chen, & Gordon, 2012; Brown, Chen, & Jacobson, 2012). This analysis revealed, for instance, that:

- Teaching-centered faculty's teaching beliefs correspond to conventional teaching practices such as lectures, tests, limited faculty collaboration, and presentational uses of technology;
- Learning-centered beliefs correspond to teaching strategies different from those stimulated by teacher- and learner-centered beliefs and entail differences in the understanding of a teacher's role, approaches to collaboration with colleagues and community, and use of technologies than those that characterize teaching and learner-centered faculty;
- The size and sector of an institution associates significantly with the stated purposes of teaching as well as the underlying teaching beliefs.

Precedent for these findings comes from, among others, Flower and Hays's (1980) seminal piece, which concluded that "People only solve the problem they give themselves to solve" (p. 3). Teaching belief constructs explored through the AAEEBL survey and their relationship to teaching practice are, in fact, rooted in this work and decades of other research and reports of practice. The binary taxonomy between teacher and learner-centered teaching drawn by Barr and Tagg

(1995) has done much to deepen discussion of variations in teaching practice. The impact of beliefs about practice is also well documented by Kuh, Kinzie, Schuh, and Whitt (2010), who have drawn on years of data from the National Survey of Student Engagement to identify high impact teaching practices such as research projects, first-year seminars, writing intensive courses, learning communities, internships, and community engagement. This work has confirmed that different practices yield different outcomes for students and affirms the utility of distinguishing between teacher-centered and learner-centered practices.

Wilson and Wineburg (1993) found that teachers' ideas about the nature of learning predict how they will teach, as well as what they hope students will learn. Leinhardt and Greeno (1991, 1994) found that the teaching of history, as an example, ranges from a focus on fact-based recall to broader conceptual approaches that focus on history as consensus-based evidentiary understanding. They outline how these different belief systems shape faculty's teaching practices, learning outcomes, and the perception of history among learners in their classes (Leinhardt & Greeno, 1991, 1994).

Pajares (1992) elaborated in detail how a person's beliefs can determine how this person will perceive, interpret, and organize information. He found that beliefs are often largely presumed, suggesting that decisions about instruction and instructional design are often unconscious (Pajares, 1992). Even implicit teaching beliefs have been found to be integral to teaching practice (Trigwell & Prosser, 1999).

One implication of this previous research is that improvement in teaching practice can be advanced when teachers are assisted in making their implicit beliefs explicit. This approach has several advocates (Ajzen, 1985; Brookfield, 1995; Kane, Sandretto, & Heath, 2002; Pajares, 1992). Initiatives along these lines have had some record of success, notably in identifying how differences in beliefs are associated with theoretical versus practical orientations toward teaching (Nottis, Feuerstein, Murray, & Adams, 2000; Trigwell & Prosser, 2004). Most of that work has focused on pre-service teachers, and measures have tended to be based in dichotomous thinking, distinguishing between traditional teacher-centered beliefs and learner-centered beliefs. Some existing measures of teacher beliefs attempt to isolate constructivist approaches to teaching, such as those drawn from the work of Lave and Wenger (1991), but research on the evolution of constructivism, as it has emerged in the Web 2.0 social networking-rich environment and consistent with learning-centered beliefs, is only now emerging. Frameworks like Moravec's (Kharbach, 2013), which compares Web 1.0, Web 2.0 and Web 3.0, and Crowley's (2013) chart the differences in orientation manifest in Massive Open

Online Course (MOOC) practice and, in critical ways, mirror the distinctions in teaching beliefs made in the AAEEBL survey.

One important implication of the open read-write web (often manifested in learning-centered and ePortfolio practice) is the intentional recognition of student agency, especially in the new context of education where, increasingly, classroom walls and boundaries are blurred. Pruyne (1996) and Jackson (2003) describe the actions of faculty who believed in the importance of nurturing student agency and the design of agency-rich student learning activities. Even earlier, Bruffee (1983, 1995) divided cooperative learning from collaborative learning, presaging the difference between learner- and learning-centered beliefs and practices. In Bruffee's (1983) nomenclature, cooperative learning occurs when students work together on a problem that has been identified or developed by a teacher in order to identify the correct answer (teacher-centered practice). Alternately, students who are presented with an opportunity to identify an issue of their own choosing and who work together to develop an approach to a challenge in an ill-structured domain, are, as Bruffee (1995) defines it, engaged in collaboration. For a thorough discussion of the social construction of knowledge imbued in collaborative learning and support from brain science, see Bransford, Brown, and Cocking (2009). The learning-centered orientation, by other names, has continued to gain ground with the momentum of the open read/write web in blogs, some MOOCs, Personal Learning Environments (PLEs), and ePortfolios. The belief that students, who are increasingly attending multiple institutions and taking non-linear approaches to their education (Selingo, 2013), learn most effectively in an environment that facilitates student agency undergirds the AAEEBL survey's learning-centered construct.

In general, teaching-centered practice tends to correspond to behaviorism. Behaviorism, predominant in the 1960s, relies heavily on an understanding of learning (and behavior) that is observable and driven by various external incentives or stimuli (Skinner, 1978). The incentives, provided by agents, including teachers, who are external to the learner, stimulate a learner's behavior.

The learner-centered belief construct is rooted in research related to cognitivism (Bruner, 1986; Piaget, 1926; Vygotsky, 1962) and constructivism (Dewey, 1933/1998; Kolb, 1984; Montessori, 1948). This research has explored variations in individuals' motivation and the invisible but inferable aspects of learning and has confirmed that learning context shapes learning outcomes and that social interaction influences learning. In the AAEEBL teaching belief constructs, beliefs and practices that allow for individual

differences and cooperative approaches to learning are reflected and represented as learner-centered.

Most recently, practices related to connectivism have gained some prominence. The third construct added to the AAEEBL framework, learning-centered, draws on principles outlined in the descriptions of learning in Web 2.0 (Batson, 2008; Grush, 2008) and connectivism as described by Downes (2006) and Siemens (2004). Siemens (2004) articulated principles of connectivism that extend social constructivism by underscoring that not only is learning influenced by interaction, but the interaction itself is a manifestation of learning. Science has since confirmed that, as Internet use expands, people are re-allocating their mental capacity. Humans are off-loading memory tasks to search engines and to our growing external collective memory (Sparrow, Liu, & Wenger, 2011). Children now raise their hands not just because they may hold an answer to a teacher's question, but because they know where to find it. Teaching beliefs and practices that put a primacy on knowledge generation afforded by the digital world and that promote community-based learning—including teachers as co-learners and co-creators—are represented in the learning-centered construct.

The teacher-, learner-, and learning-centered constructs, then, subsume and extend previous theories. Notably, previous findings from the AAEEBL survey confirm that few teachers are consistently in a single category. A learning-centered teacher does not ignore the role of providing incentives (stimuli, in the language of teacher-centered behaviorists). A teacher-centered practitioner may not discount the agency of the learner, but more likely relegates that agency to occasions beyond the purview of his or her instruction. The constructs of teacher-, learner-, and learning-centered that AAEEBL has developed are general but nonetheless, as our previous research (Brown, Chen, & Gordon, 2012; Brown, Chen, & Jacobson, 2012; Brown, Cho, & Ater-Kranov, 2012) has confirmed, statistically viable (exploratory and confirmatory factor analyses—see Table 1) and useful when presented with appropriate qualification.

The impetus for this research was to extend the AAEEBL survey beyond ePortfolio users in order to understand better the three teaching belief constructs and, particularly, how educators perceive the constructs in their own experience as learners and in their own teaching practice.

Method

Research Questions

Research Question 1: How do graduate students (advancing educators) understand the three belief constructs (both in the survey and upon reflection), and

how does their understanding compare to that of ePortfolio practitioners who have responded to the same survey questions?

Research Question 2: When the locus of analysis is the individual respondent, how do individuals vary across belief constructs (e.g., teacher-centered, learner-centered, and learning-centered)? Because past research suggests that individuals hold a mix of all three teaching beliefs, the three belief constructs and various possible combination of constructs are considered: teacher, learner, learning, teacher-learner, teacher-learning, learner-learning, teacher-learning, high in all three, and low in all three. As an illustration, a random sample of 100 faculty at a research institution found that 18% of respondents were entirely teacher-centered, 9% learner-centered, 7% learning-centered, 14.5% high in all three constructs, 11% teacher-learner-centered, 5% teacher-learning-centered, 23% learner-learning-centered; 12.5% were low in all three (Brown, Cho, & Ater-Kranov, 2012).

Participants

A single-site, mixed method action research approach was used with graduate students involved in two semester-long graduate courses offered through the Adult Organizational Learning and Leadership program at a medium-sized, moderately selective land grant university in the Inland Northwest United States. Graduate students in this program aspire to become (or advance as) professional educators in schools, universities, non-profit agencies, companies, and other organizations in which adult learners (defined as anyone 18 years of age or older) are present.

Study participants were 14 graduate students involved in Adult Learners: Foundations and Characteristics (AOLL 573), a beginning core course required for master and doctoral students seeking advanced degrees in Adult Organizational Learning and Leadership (AOLL); and 13 graduate students and the same instructor as above involved in Strategies for Facilitating Adult Learning (AOLL 575), a course required for students to complete the Human Resources Development option of the AOLL degree program. AOLL 575 could also be used as an elective for any AOLL student. These and all AOLL courses are offered online through Blackboard's course management system bblearn. Except for three synchronous meetings held via bblearn's online videoconferencing system, all interactions in both courses were text-based and asynchronous.

The goal of both graduate courses is to develop the students' understanding of and appreciation for learning in adulthood. AOLL 573 is designed as a survey course to introduce the philosophical, psychological, social, and economic foundations of adult education and

Table 1
Factor Pattern for Exploratory Factor Analysis of Teaching Belief Instrument Based on Three Factors

	Item	Teacher-Centered Factor 1	Learner-Centered Factor 2	Learning-Centered Factor 3
Teacher-Centered	I use a textbook to plan my course.	.635	-.051	-.039
	Lectures are important models of subject matter expertise.	.813	-.082	.079
	I focus primarily on information students will need to pass the exams.	.560	-.113	-.082
	When evaluating student performance, it is important to consider multiple examples of student work.	-.078	.348	.190
Learner-Centered	Instruction should be flexible to accommodate students' individual needs.	-.343	.627	.016
	I am certain that I am making a difference in the lives of my students.	.234	.396	-.092
	I encourage students to constantly check their own understanding while they are studying.	-.111	.660	.162
	I am good at helping all the students in my classes make significant improvement.	.031	.726	-.083
Learning-Centered	My course activities usually require students to work individually.	.332	.133	-.636
	I encourage students to work together to solve authentic problems that students help identify.	-.014	-.138	.733
	I provide opportunities for my students to critique each others' work.	-.226	-.240	.439
	Many of my assignments require students to work in groups to arrive at correct answers and solutions.	.237	.244	.738
	I assess students' teamwork skills.	.077	.284	.659

characteristics of adult learners. Students in this course are tasked with generating ideas related to adult learning and responding to ideas and theories forwarded by scholars and their peers in the course. Each student completes a capstone project that synthesizes learning in the course relevant to their current or desired career working with adult learners. AOLL 575

provides participants with an opportunity to reflect upon the underlying structure of their beliefs about teaching adults and learning in adulthood, to broaden and deepen their understanding of adult learning theory, and strengthen their skills in the practice of teaching adults. (Henscheid, 2013, para. 1)

The structure of weekly and culminating assignments in AOLL 575 is similar to those in AOLL 573, but the course puts greater emphasis on developing appropriate strategies for teaching adults

in the students' current or desired professional contexts.

A total of 25 graduate students participated in the study (including two enrolled in both courses). Eleven (44%) of the 25 students were male. The instructor (and action researcher) was a female with a Ph.D. in Education and 17 years of experience teaching undergraduate and graduate students. She was in her second year as a Clinical Assistant Professor in the Department of Leadership and Counseling housed in the university's College of Education.

Research Design

Data were collected from quantitative and qualitative sources because "quantitative and qualitative inquiry can support and inform each other" (Miles & Huberman, 1994, p. 396). Research questions 1 and 2 were investigated first with administration of the survey, and then in more detail through the reflective

assignments described below. The study was designed as action research, an investigative technique employing strict research methodologies aimed at solving problems in social contexts. It achieves its objective when researchers provide knowledge leading to actions that are intended to make a positive change in these contexts (Bogdan & Bilken, 2007; Marshall & Rossman, 2011). This attention to problem solving is particularly relevant in contexts such as formal educational settings, in which formative improvement is particularly critical (Marshall & Rossman, 2011; Stringer, 2007; Willis, Inman, & Valenti, 2010). Action research achieves its best results when members of the research team share a stake in the practical outcomes of the inquiry and understand its potential costs and benefits (Stringer, 2007; Willis et al., 2010). As stakeholders in the setting, non-neutral action researchers seek to collaborate with participants in the research in order to influence improvement in organizations. This type of scholarly inquiry “is often conducted in organizational contexts and in education where professionals collaboratively question their practice, make changes, and assess the effects of those changes” (Marshall & Rossman, 2011, p. 23). The action research approach employed for this study consisted of an iterative process of planning; intervention and data collection; data analysis; and reflection (Reason & Bradbury, 2008). Planning for the study and the courses was achieved by the course instructor, who was collaborating with researchers with backgrounds in ePortfolio research, including authorship and analysis of the annual AAEEBL survey. The action research approach was selected as ideal for its potential simultaneously to answer the research questions and to help the instructor and the students achieve the objectives of both courses.

Data Collection

To establish a baseline measure of teaching beliefs, the instructor invited study participants to respond to the AAEEBL survey during the week prior to the beginning of the semester, as described in Appendix A. The survey helped to introduce the teaching belief constructs and begin the process of engaging the participants in reflection on the distinctions among teacher-, learner-, and learning-centered beliefs and practices. The course was designed using the constructs as a lens for reflecting upon students’ own learning and their own teaching plans and practices.

The data sources and collection timeline for each of the two study stages are visualized in Table 2, below. Reflective writing assignments were posted in bblearn, where students also submitted their finished work. The survey was administered

via the online service SurveyMonkey (<http://surveymonkey.com/>).

Part I: Baseline Survey Instrumentation

A five-point Likert scale survey was used to measure students’ teaching beliefs. Survey respondents were asked to choose one of the following on each item: *strongly disagree*, *disagree*, *neither disagree or agree*, *agree*, *strongly agree*, and *N/A*. Items associated with each teaching belief construct are presented in Table 3. The survey was validated by Brown, Chen, and Gordon (2012). The reliability Cronbach’s alpha coefficients for teacher-, learner-, and learning-centered beliefs were .577, .632, and .647, respectively. The overall combined teaching beliefs reliability Cronbach’s alpha coefficient was .618 (Brown, Chen, and Gordon (2012). Three criteria were used to determine the number of factors to retain: Kaiser or mineigen greater than 1 (K1); Cattell’s (1966) scree test; and Parallel Analysis (PA; Horn, 1965). The results revealed that the teaching beliefs instrument was a three-factor model, with a variance of 34.465%. Exploratory factor analysis was used to determine which items make up the different subscales of the instrument. The result of the exploratory factor analysis revealed that the 13 items divided into three subscales: (a) teacher-centered belief (three items, loadings ranged from .560 to .813); (b) learner-centered belief (five items, loadings ranged from .348 to .726); and (c) learning-centered belief (five items, loadings ranged from .439 to .738). See Table 2 for each of the 13 items. The following two items, drawn from Trigwell and Prosser’s (2004) previous work, were added to teacher-centered beliefs for use in Phase 2 confirmatory factor analysis: (a) I design my teaching with the assumption that most of the students have little knowledge of the topics to be covered; and (b) I feel it is important to present a lot of facts to students so that they know that they have to learn for this subject. The confirmatory factor analysis was conducted to determine whether the teaching beliefs instrument was a three-factor model. The results revealed that “teaching beliefs” was a three-factor structure with the overall chi-square (χ^2) = 104.687, df = 69, and p = .003 < .05, TLI = .886 < .95, CFI = .914 > .90, RMSEA = .054 < .06, and SRMR = .0659 < .08. The item “I assess students’ teamwork skills” was removed from the model because it loaded on all three factors. Therefore, the teaching beliefs instrument had demonstrated both internal consistency and construct validity (Brown, Chen, & Gordon, 2012). Figure 1 displays the final 14 online survey questions and rating scale.

Survey responses were analyzed through both individual questions and a respondent’s combined responses. Underlying the analysis is the recognition

Table 2
Data Collection Timeline

Research stage	Data source	Participants	Time data collected
Stage 1	Survey	30 graduate students who enrolled in two higher education classes	September 4, 2013
Stage 2	Documents (Student reflections and student peer coding of reflection using belief constructs and further reflection)	25 graduate students who enrolled in two higher education classes	September 15-22, 2013

Table 3
Components of Teaching Beliefs Survey

Category	Item
Teacher-Centered Belief	1. It is important to present facts to students to provide a foundation for the subject.
	2. I focus on information students will need to pass exams.
	3. I design instruction with the assumption that most students have little knowledge of the topics.
	4. I use a textbook to plan my instruction.
	5. Lectures provide important models of subject matter expertise.
Learner-Centered Belief	6. The courseware helped me to acquire a deeper understanding of the content knowledge.
	7. I learned a lot from this program.
	8. Learning from this courseware is difficult for me.
	9. It is hard for me to find information related to the questions.
Learning-Centered Belief	10. I always knew where to go next when using this courseware.
	11. I always knew where I was when using this program.
	12. The design of the courseware caused confusion in me.
	13. I often felt lost when browsing the courseware.

that belief constructs are fluid, context dependent, and, as previous research has indicated and as noted above, infrequently held uniformly by individuals. The analysis therefore presumes that it is the aggregate responses in the context of the research that is of interest.

Further, it is the tendency of beliefs among ePortfolio practitioners who responded to earlier administrations of the AAEEBL survey that has yielded the most useful insights. Previous research by Brown, Chen, and Jacobson (2012) reported that ePortfolio practitioners have, in general, different belief profiles than faculty randomly surveyed across an institution. It appears further that ePortfolio practice is associated with increased percentages of beliefs that are learning—rather than teacher-centered. It is understood that a convenience sample among previous respondents to the AAEEBL annual survey reflects an association, not a causal relationship.

Procedures. In the study reported here, every graduate student enrolled on the first day in each course was invited to respond to the survey. All complied,

which therefore indicates that there is no sample bias per se. Rather, there is a response bias in that respondents are all from a population pursuing advanced degrees in education at a research institution in the inland northwest. It is the insight into the teaching beliefs of this population—this bias—that is of interest in this research. While 30 graduate students completed the survey, only 25 remained in the courses to participate in subsequent reflective activities. Post hoc analysis of the characteristics of students who did not remain in the courses demonstrated little difference between the population of leavers and those who remained. All 30 survey responses, therefore, were included in analysis of survey data.

Data analysis. Following completion of the survey, responses were analyzed in two ways: first, to review the distribution of teaching beliefs relative to each question or item; and, second, to understand the distribution of teaching beliefs among the sample population. First, when the locus of analysis is by question (item), how do responses reflect the three belief constructs, and how does the distribution

Figure 1
The Survey Questions and Rating Scale

1. Please rate yourself according to how much you agree with each statement.	Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree	N/A
Instruction should be flexible to accommodate students' individual needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to present facts to students to provide a foundation for the subject.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I encourage students to constantly check their own understanding of their learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I provide opportunities for students to critique each other's work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I focus on information students will need to pass exams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I design instruction with the assumption that most students have little knowledge of the topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most assignments require students to work individually.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use a textbook to plan my instruction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most group work requires students to provide correct answers and solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lectures provide important models of subject matter expertise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When evaluating students, it is important to consider multiple examples their work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at helping all the students in my purview make significant improvement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I encourage students to work together to identify and solve authentic problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am certain that I am making a difference in the lives of students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

compare with ePortfolio practitioners who have responded to the same questions? Second, when the locus of analysis is the individual respondent, how do individuals vary across belief constructs and how does that distribution compare with ePortfolio practitioners?

Part II: Intervention Reflective Activities

Following administration of the survey, students were asked to complete three assignments related to the teaching belief constructs and to the genesis of their own beliefs about what “good” teaching means. The first assignment, given to students in both courses, asked the students to reflect on who taught them what good teaching means. They were asked to describe in 400 words the behaviors of teachers, in any setting, that had the most powerful impact on their notions of good teaching. This assignment (labeled Assignment #2) is offered as Appendix B. The second assignment in AOLL 573 (Appendix C) asked these students to conduct a comparison of teaching beliefs and behaviors among two well-known educators (Malcolm Knowles and Stephen Brookfield) and themselves. In this

creative writing/media assignment, they were tasked with describing what good teaching meant for the scholars, what it means to them, and what life experiences might have shaped these philosophies. The second assignment in AOLL 575 (Appendix D) asked students to describe in 1,000 words an instance in which they had received short-lived and superficial skill development and to describe how they would redesign that experience into an opportunity for learning to last beyond a single course. They were asked to justify their choices based on teaching-belief constructs. The final assignment in the sequence, shared by both courses, was each student’s opportunity to code a peer’s writing on the two previous assignments, using the teaching belief constructs to analyze their findings and draw conclusions, and to describe their own beliefs relative to the writer’s beliefs (Appendix E).

Data analysis. As an iterative process, creation of the above assignments was based on preliminary, descriptive statistical analysis of survey data and the instructor’s assessment of student writing using the Association of American College and University’s (AAC&U, 2014) VALUE Critical Thinking Rubric. As

described below, scores on the rubric were used to guide coding of reflective exercise data. In a norming exercise held during each course's initial synchronous meeting, students were instructed that a 2.5 or higher rating (on a 4-point scale) constituted acceptable work. Use of this standard supported instructor feedback on the students' work and informed data coding by the instructor and a second researcher. In particular, this standard was used as the basis for a decision to discard from analysis vague statements made by students about teaching beliefs or behaviors. The result of this determination is described in greater detail under "Findings."

Three codes were assigned to student writing on four assignments—one each for teacher-, learner-, and learning-centered belief constructs—by two sets of raters, the students and two members of the research team, including the course instructor. In total, 79 pieces of student writing, ranging from 400 to 1000 words each, were analyzed.

Results

Part I: Survey Results

Survey results were rendered first, by item or question (What was the overall variance in the way graduate student emerging educators responded to questions relative to the three belief constructs?) and, second, by respondent (How are emerging educators' belief profiles distributed across the belief constructs, and how do those profiles compare with those of ePortfolio practitioners?). Participants responded to 78 questions; not all of those surveyed responded to all questions analyzed for beliefs. The distribution of beliefs by question, as depicted in Figure 2, illustrate a relatively even spread among the three constructs, with a slight inclination toward learner-centered perspectives.

Survey results were calculated as a percentage and then compared with results from the 2012 and 2013 AAEEBL response. This comparison yielded differences across the three populations: ePortfolio practitioners who responded in 2012 and 2013, and graduate student participants in this survey. Graduate students were slightly more inclined to reflect teacher-centered thinking than were ePortfolio practitioners (32%, compared with 24% and 20%) and slightly less likely to reflect learning-centered responses (30%, compared with 35% and 38%).

When belief profiles are aggregated and allocated to individual respondents, the population profile indicates that graduate students are high across all three belief profiles (see Figure 3).

In sum, the results by respondent showed that the emerging-educator graduate student population was generally learner-centered, more likely to tend toward

teacher and learner-centered beliefs, and notably less likely than practicing ePortfolio educators to tend toward learner- and learning-centered beliefs. Notably, the emerging educators were much more likely to hold beliefs that are high in all three categories. Given the limited number of respondents, tests for statistical significance were not run.

The reflective activities were introduced to shed light upon these tendencies and to reveal in some detail how emerging educators understand the belief constructs.

Part II: Reflective Activities Results

As described above, writing for all student assignments was initially reviewed by students in the courses, who coded examples of the three belief constructs provided by their peers. Similarly, student reflection was also coded by two researchers, including the teacher of the two courses. During coding by the research team, categories were assigned, and through a process of data reduction, some 40 categories emerged. Data reduction allowed researchers to identify emerging themes, categories, and patterns, to test emerging hypotheses against the data, and to combine categories. Both indigenous (the language of the respondents) and analyst-constructed typologies (Marshall & Rossman, 1989; Patton, 1990) were used, as displayed in Table 4.

When reliability is calculated as percentage agreement, the two researchers agreed on 236 out of 239 total teaching-belief reference statements, or 98% of the time. Researchers and graduate students (i.e., emerging educators) agreed on 156 of 239 reference statements, or 65% of the items.

Out of 82 disagreements between the researchers' and graduate students' ratings, 40 (48%) were in behaviors that students identified as learning-centered and researchers did not. Twenty-four (29%) were in the teacher-centered column. Nineteen (23%) were in teaching-centered identifications. At the same time, of the behaviors and other manifestations of teaching beliefs that students identified, only 55 of 239, rightly or wrongly, were categorized as learning-centered. Researchers identified only 15 of 239 teaching behaviors or expressed beliefs as learning-centered. That constitutes 6% of total identified teaching practices. Less exposure to or experience with learning-centered education, it appears, means less agreed-upon evidence of practice and/or less reliability or stability of the construct.

Discussion

The two-fold purpose of this research was (a) to extend the scholar and practitioner current understanding

Figure 2
Graduate Student Teaching Belief Distribution/Survey Question

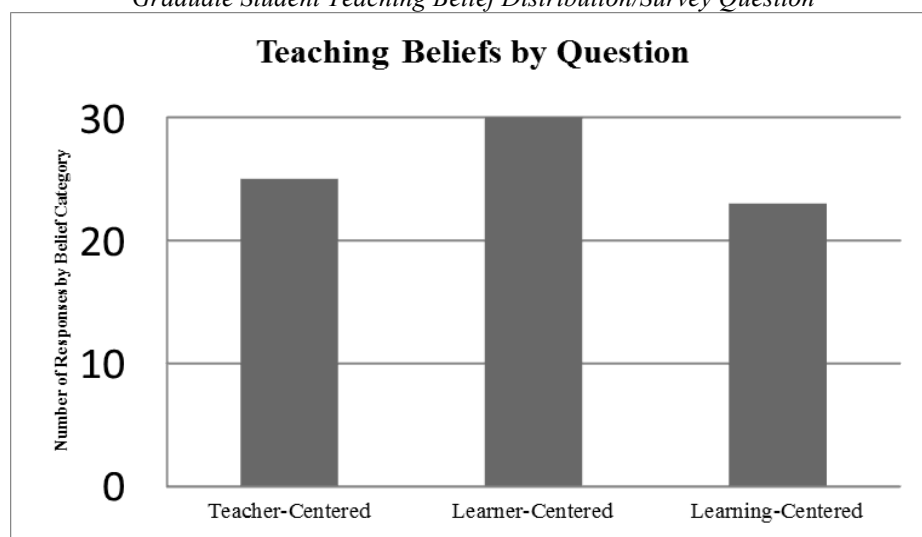
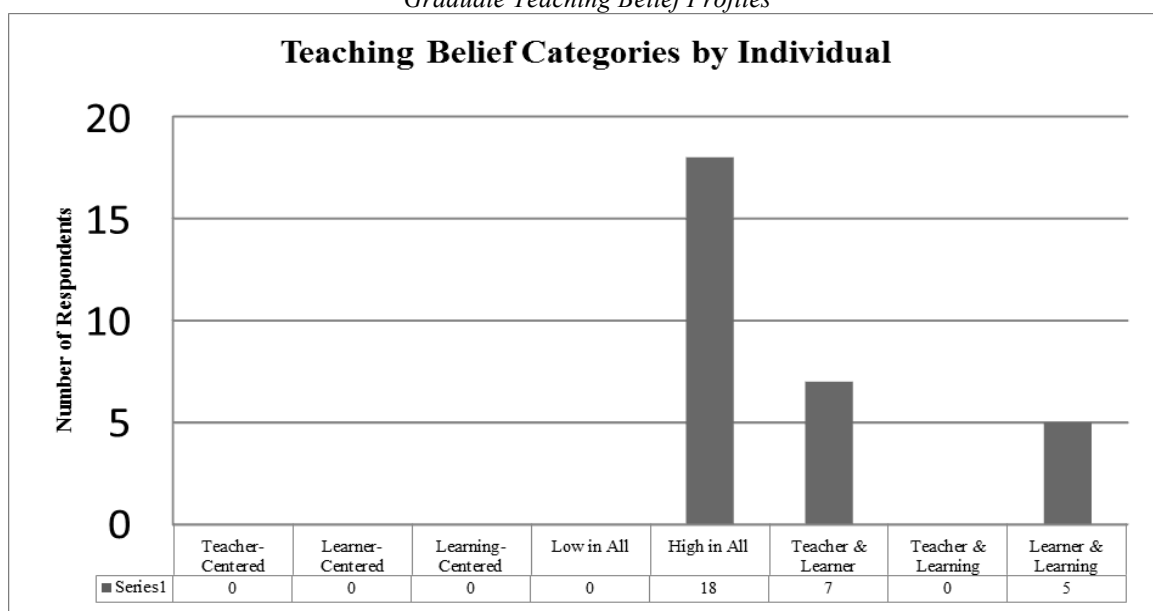


Figure 3
Graduate Teaching Belief Profiles



Note. (n = 30)

of teaching beliefs being developed among ePortfolio practitioner respondents to the annual AAEEBL survey; and (b) using an action research approach, to provide graduate students aspiring to or advancing as professional educators an opportunity to reflect on their own teaching beliefs and attendant behaviors.

Survey results indicate that these graduate students rate high in all three belief constructs. This profile is somewhat unusual. By comparison, only 14.5% of randomly selected faculty members

involved in a previous study (Brown, Cho, & Ater-Kranov, 2012) were high in all three. In the 2013 AAEEBL survey only 38% of ePortfolio practitioners were high in all three, but 60% of graduate students were high in all. Our initial speculation is that these findings reflect graduate student enthusiasm.

In the educational research tradition, the review of student reflections and peer coding raised as many questions as it answered. First, there is some

Table 4
Response Coding and Reliability

Response category	Teacher	Learner	Learning	% Agree
1. Teacher lectures and facilitates focused class discussion ("Memorize facts and death by PowerPoint").	10	6	0	63%
2. The Teacher "allowed us to interact with peers and ask questions."	2	7	3	58%
3. Students lead discussion (according to teacher parameters).	0	2	2	50%
4. Teacher is entertaining/enthusiastic.	1	2	2	20%
5. Teacher directs methods, proxemics "reason to the correct answer."	6	3	1	60%
6. Teacher models learning (meta; NOT teacher as a model) and provides authentic examples.	6	14	3	61%
7. Teacher imparts/shares/bestows mastery of knowledge, shows (why neglected).	9	2	3	64%
8. Teacher defines scope of learning (including critical thinking).	8	3	2	61%
9. Teacher provides guidance, feedback, coaching (advises).	2	11	2	73%
10. Teacher is encouraging and supportive and compassionate, empathetic, listens, "above and beyond" (affect, mentoring) personal connection, "truly cared."	4	16	2	73%
11. Teacher encourages understanding multiple perspectives.	0	1	2	33%
12. Teacher withholds purpose of activity.	2	0	0	100%
13. Skill training, role playing, practice	3	3	3	33%
14. Teacher maintains rigorous expectations is strict	3	0	1	75%
15. Small group discussion/work (teacher instigates cooperative groups; "We were allowed to interact with our peers and ask questions.")	0	2	3	20%
16. Class is repetitive ("always the same").	4	0	0	100%
17. Watching videos	1	0	0	100%
18. Rote learning/multiple choice tests	3	0	0	100%
19. "All the questions have standard answers."	0	2	1	66%
20. Student responsible for own answers and making course content relevant	0	2	0	100%
21. Students encouraged to be creative (outside box thinking)	0	2	0	100%
22. Content coverage trumps learning ("If you did not understand what you were learning you were in trouble because the class was on a time schedule not on a learning schedule.")	1	0	0	100%
23. Hands-on learning opportunities	0	1	3	25%
24. Real life application (often collaborative)	0	6	0	100%
25. Teacher encourages student to make connections with own aspirations	0	0	1	100%
26. Teacher guides analysis, making connections, creating systems and models	2	0	0	0%
27. Teacher starts with needs of learners or adapts to performance/values student opinion/perspective and unique purposes (individualized; "She [knew] that the classroom was full of students who do not fit into a single profile, with students having different personalities and experiences in life.")	2	20	6	71%
28. Students make their own choices ("wander through process")	0	0	2	100%
29. Teacher is authority/unapproachable	2	1	0	66%
30. Teacher designed course around comprehensive and integrated activity	0	1	0	100%
31. Teachers facilitates field trip/tour	1	2	1	50%
32. Teacher initiates conversation outside of class	0	1	0	100%
33. Teacher gives students skills to succeed on own	0	0	1	100%
34. Teacher promotes self-guided strategies and shared responsibility	0	0	1	100%
35. Teacher promotes student reflection/metacognition	0	0	3	100%
36. Authentic surveillance	1	0	0	100%
37. Students customize own curriculum, self-directed, the curriculum was shaped by the students, helping them learn the material they wanted to rather than what the teacher wanted to teach about a subject.	0	1	4	80%
38. Students teach class (and teacher)	0	1	2	66%
39. Community field work (defined by teacher)	1	0	0	0
40. Teacher encourages questioning of authority	0	0	1	100%
TOTALS	74	110	55	

recognition among graduate students, as well as researchers, of the implicit irony in looking for learning-centered practices within the confines of an institution of formal learning. Even collaborative learning exercises during which students are permitted to work together to solve problems or generate knowledge are in some respects "teacher-

centered," as evidenced by one participant's comment that he was "allowed [by the teacher] to interact with our peers and ask questions." Another student, reticent to learn history, was grateful for the teacher who "taught in such a way that I was forced to engage with the events and the stories I was reading as if I had been there."

The evidence also suggests that the teaching belief construct is imbued with considerable connotation (Consider the story of the principal who drops into a class to observe an instructor who has the class engaged in collaborative group work: “I’ll come back when you are really teaching,” he quips.)

Consistent with directions given in the students’ assignments, codes were applied by the researchers as much as possible to activities that students described in concrete terms. In reviewing the Critical Thinking Rubric used for assessing their work, these students had been introduced to the standard of evidentiary proof that would be used in the class. At the 2.5 level, the rubric suggests that evidence should be described clearly enough to allow for its evaluation and analysis. Despite this, a number of students used vaguely worded platitudes to describe good teaching. For instance, students made statements such as “Good teaching is important if one is to learn to work hard in order to get anywhere in life,” or, “In Mr. [X’s] class, his respect was something we had to earn.” In addition, general descriptions provided by students were not coded if they lacked evidence of teacher agency. For instance, observations such as “The learner is self-directing” occasionally were presented without reference to what a teacher said or did to elicit self-directed learning.

Such phrases were not included in the researchers’ analysis of data, but they do inform the interpretation as they highlight the amorphous nature of people’s teaching beliefs and underscore the influence of affect, which clearly complicated the students’ efforts to code the work of their peers. One pronounced finding in this study is that many students consider teacher-centered practice undesirable or bad and learner and/or learning-centered practice—whatever it may mean—as good. Caring, comedic, or entertaining educators, even when they lecture, were often rated as learner- or even learning-centered. The opening line of one graduate student’s reflection on the coding she had done of her peer’s work is indicative: “To a great degree, we become who we are and believe what we believe by learning from who we like.” This primacy of affect in describing good teaching is echoed by another student, who said when he thinks of a good teacher, he “thinks of someone who empathizes with and relates to their students in order to assist them in developing knowledge or skills.” In some cases, tough love by a teacher is better than none at all, as illustrated in this student’s comment:

But above all else, he loved to bestow knowledge on others. However, he didn’t simply give knowledge and then ignore those he gave it to. He would bestow pride in them by testing them while they were under physical or mental stress.

These findings partially explain why the researchers identified 13 ratings that demonstrated a lack of intra-rater reliability. In these cases, students contradicted their own ratings, occasionally in adjacent sentences, when coding their peers’ writing. When it was appreciated as learning-centered, a lecture was understood to be valuable if the teacher “showed he cared” by doing “what he needed to do to spread wisdom.” An unapproachable or authoritarian teacher might be considered, by the same student, to be displaying teacher-centered behavior in their lecturing. In defense of this confusion and the implications for reliability, it may be useful to remember, as Shirkey (2013) observed, “If it’s impossible to create a completely coherent categorization, even when you’re doing something as physically related to essence as chemistry, imagine the problems faced by anyone who’s dealing with a domain where essence is even less obvious” (para. 17).

Interestingly, what the researchers considered teacher-centered behaviors often received a mix of learner and learning-centered codes from the students. The discrepancy seems to lie again with the students’ perception that direction from the teacher was given with positive intent. The tone and the extent to which a teacher may value the students’ process and support the development of their learning are, to these emerging educators, what indicates the educator’s teaching belief. The strongest areas of agreement among researchers and graduate students was recognition that meeting students where they are and adapting according to their performance—individualizing instruction to the extent it is possible—reflects a learner-centered belief and practice.

Implications

The study reported here has implications for researchers, teachers, and faculty-development and instructional-design professionals. Researchers seeking to extend the work of the AAEEBL survey, with administration of it to new populations, are welcome to do so and encouraged to contact the authors for support in designing future studies. Testing the face and construct validity of the survey with new populations would deepen understanding of the teaching beliefs and practices across groups. The action research approach employed here provided a powerful, and appropriate, opportunity for formative improvements in the teaching and learning experiences of the instructor and students who collaborated in conducting the study. As designed, the research was seen by students as engaging in “something real” and relevant to development of their professional identities. Ongoing informal comments and end-of-term student course evaluations reflected highly positive responses to the action research approach. Teachers of emerging educators are

especially encouraged to help students make their teaching beliefs explicit. Results of this study indicate that this population may need special support to widen their toolkit of teaching strategies beyond those compatible with teacher- and learner-centered beliefs. Teachers, academic departments, colleges, and entire institutions could benefit from reflecting on individual and collective teaching beliefs and attendant practices through participation in this or similar surveys. Faculty development and instructional design professionals could adopt similar approaches to uncover their own, or their clients', teaching beliefs as part of development activities or prior to design of an individual course or entire curricular or co-curricular program.

Limitations

Caution should be exercised in generalizing these findings to other contexts. As noted above, early administrations of the AAEEBL survey have suggested that differences in teaching beliefs and practices exist across institution types. Participants in this study were engaged primarily in online coursework leading to an advanced degree in adult organizational learning and leadership, administered through a medium-sized, moderately selective land grant institution in the inland northwest. The instructor is a veteran teacher of graduate students, with longstanding professional ties to the researchers. And finally, this was the first administration of the AAEEBL survey to a population not composed of ePortfolio users, those individuals for whom the survey was originally designed. The researchers believe, however, that items in the survey are conceived broadly enough to be of use in understanding teaching beliefs and practices of educators at all levels and in a variety of contexts.

Conclusions

Though graduate student comments suggested that teacher-centered beliefs might be considered less desirable than others, it is not the intent of the research or the viewpoint of the researchers to suggest that a belief profile progresses developmentally from teacher- to learner- to learning-centered, or that these categories reflect the quality of teaching. We understand that the constructs indicate a scaffolding that develops as needs change in different teaching and learning contexts. From the researchers' perspective, a steady diet of teacher-centered practice is as problematic as unmediated learning-centered practice.

The paucity of data related to learning-centered beliefs and behaviors from the student writing was a surprise to the researchers. Few students recounted instances in which good teachers had promoted agency among learners to help determine how academic work

would be represented and what should be learned. Rare were those instances when students said they had collaborated to generate new knowledge, employed vigorous peer review, networked with others in and out-of-class to inform their learning process, or were encouraged to create or embody their own learning. These students were not blind to the fact that they had missed out on learning-centered experiences. As suggested above, some wondered if it was even possible in formal learning environments. Others had just never seen it. One student expressed the timidity others also confessed to with her acknowledgement that she

would get lost without teachers' guidance. I [am] so used to meeting teachers' expectations. It will take time for me to learn to make my own learning plan—even to find my own needs and interests. At the same time, I do admire and agree [with] the importance of [learning-centered approaches] and would love to be able to explore and contribute my own perspectives.

The authors of this study consider this quiet sentiment from one beginning graduate student at one university as a clarion call to educators everywhere and at every level. An increasingly networked Web 2.0 world demands explicated teaching beliefs and a range of intentionally designed teaching practices appropriate to this new world.

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Author's Note

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Appendix A
Course Assignments #1-#4 – AOLL 573 and 575

Introduction to Assignment #1 (both courses)

Hello students: I have pasted below the content of the email I sent you Sunday, August 25th. You have nothing to post to this blog. This first assignment will be completed in SurveyMonkey (as noted below).

Greetings students!

No, the semester hasn't started yet but yes I am sending you your first (non-graded) assignment. You are welcome to wait until tomorrow to complete it if you wish. For those of you who have enrolled in my courses before this first assignment will look familiar—YOU are designing this course with me. Those of you who are taking both of my teaching adults courses will only need to complete this survey once.

Introduction to Survey

Building YOUR course—a non-graded assignment:

In keeping with best practices for teaching adults, I begin every class I teach with a survey gauging student needs and design each course around those needs. This survey includes two sections. Your answers to the first section will help me understand the beliefs you have about what it means to be a teacher. The second section offers you the opportunity to talk about yourself and the experiences you bring to this course. Because many of us may never be in the same physical space, I have found making student-profile information (from this second section) available to all students in the course helpful for building a sense of community across distance. Please answer the second section questions knowing that you are speaking to your fellow students enrolled in the course.

A special note about questions in the first section:

This section is part of an ongoing series of research activities aimed at examining how beliefs about what it means to be a teacher relate to teaching practices. Questions from this section were developed by researchers from the Association for Authentic, Experiential and Evidence Based Learning (AAEEBL). With your permission I would like to share anonymous answers to these questions with these researchers. Your names and other identifiers will in no way be attached to these data if you allow me to share them. Further notes about your rights related to this survey are offered below. If you DO NOT wish to have your anonymous answers to the first section questions included in this national research project, please indicate your wishes in an email to jeanh@uidaho.edu with the subject heading PLEASE DO NOT SHARE MY ANONYMOUS DATA WITH AAEEBL. Your grade in the course will in no way be impacted by your choice.

Who will see my profile information from the second section of the survey?

Only students enrolled in this course and your instructor will see this information. It will be included on our bblearn site.

Will my information in the first section of this survey be kept private?

The national AAEEBL survey where these questions originate has been approved by the hosting institution's Institutional Research Board. The responses will be confidential. Aggregated results may be published or presented at professional meetings, but the identities of all research participants and their programs and institutions, unless explicit permission is given, will remain anonymous.

What are my rights as a respondent to this survey?

Your participation is completely voluntary (and not part of your grade for this course). You may choose not to answer specific questions or to stop participating at any time.

What does my informed consent mean?

By clicking on the Next button below, you indicate that you understand my goals for this survey and how the information you provide will be used. An e-mail to me indicating that you do not wish your first section data to be shared with AAEEBL will be used as evidence that you do not consent to participate in this research. If you do not send an e-mail to Jean removing your data from this research clicking Next means you consent to participate and are ready to begin the survey.

Portland State University HSRRC Proposal #122052

WELCOME TO YOUR COURSE! I AM LOOKING FORWARD TO LEARNING WITH AND FROM YOU.

Survey

Please check the option(s) that best represent your role(s). (Mark all that apply)

- ☐ K-12 educator
- ☐ College or university faculty
- ☐ College or university non-faculty employee
- ☐ Private business or industry employee
- ☐ Human resources professional
- ☐ Non-profit employee
- ☐ Part-time employee
- ☐ Full-time employee
- ☐ Part-time graduate student
- ☐ Full-time graduate student
- ☐ Other (please specify)

2. If employed, name of employer:
If employed, name of employer:
3. City and state of current residence:
City and state of current residence:
4. Estimated number of employees at employer:
Estimated number of employees at employer:
5. For K-12 and college or university employees, estimated number of students at institution:
For K-12 and college or university employees, estimated number of students at institution:
6. For K-12 and college or university employees, please indicate the characteristics of your institution (Mark all that apply).

☐ For K-12 and college or university employees, please indicate the characteristics of your institution (Mark all that apply)

- ☐ Public institution
- ☐ Private institution
- ☐ For profit
- ☐ Two-year
- ☐ Four-year, primarily nonresidential
- ☐ Four-year, primarily residential (students live in residence halls/dorms provided by your institution)

☐ Exclusively graduate/professional

☐ Research university

☐ Other (please specify)

Whether you currently teach/provide training or not, please rate yourself according to how much you agree with each statement. (Options: Strongly Disagree, Disagree, Neither Agree Nor Disagree, Agree, Strongly Agree)

- Instruction should be flexible to accommodate students' individual needs.
- It is important to present facts to students to provide a foundation for the subject.
- I encourage students to constantly check their own understanding of their learning.
- I provide opportunities for students to critique each other's work.
- I focus on information students will need to pass exams.
- I design instruction with the assumption that most students have little knowledge of the topics.
- Most assignments require students to work individually.
- I use a textbook to plan my instruction.
- Most group work requires students to provide correct answers and solutions.
- Lectures provide important models of subject matter expertise.
- When evaluating students, it is important to consider multiple examples of their work.
- I am good at helping all the students in my purview make significant improvement.
- I encourage students to work together to identify and solve authentic problems.
- I am certain that I am making a difference in the lives of students.

Is there anything else you would like to say about yourself as a teacher?

Please indicate the technologies you use in your teaching (check all that apply):

- | | | |
|---|--|---|
| <input type="checkbox"/> I do not use technology in my teaching | <input type="checkbox"/> Google Sites | <input type="checkbox"/> Sakai |
| <input type="checkbox"/> Adobe | <input type="checkbox"/> Homegrown or internal development | <input type="checkbox"/> SchoolChapters |
| <input type="checkbox"/> Angel | <input type="checkbox"/> iWebFolio | <input type="checkbox"/> Seelio |
| <input type="checkbox"/> Bedford/St. Martin's e-Portfolio | <input type="checkbox"/> Knext | <input type="checkbox"/> Skype |
| <input type="checkbox"/> BlackBoard | <input type="checkbox"/> Learning Agents | <input type="checkbox"/> Symplicity |
| <input type="checkbox"/> Bluehost | <input type="checkbox"/> Learning Objects | <input type="checkbox"/> TaskStream |
| <input type="checkbox"/> Chalk&Wire | <input type="checkbox"/> LiveText | <input type="checkbox"/> The Portfolium |
| <input type="checkbox"/> ConnectEDU | <input type="checkbox"/> Mahara | <input type="checkbox"/> TK20 |
| <input type="checkbox"/> Desire2Learn | <input type="checkbox"/> Manaba | <input type="checkbox"/> VSee |
| <input type="checkbox"/> Digication | <input type="checkbox"/> Moodle | <input type="checkbox"/> Web 2.0 Mash-ups |
| <input type="checkbox"/> eFolio World | <input type="checkbox"/> Pathbrite | <input type="checkbox"/> Weebly |
| <input type="checkbox"/> eLumen | <input type="checkbox"/> PebblePad | <input type="checkbox"/> Wiki |
| <input type="checkbox"/> eValue | <input type="checkbox"/> Powerpoint | <input type="checkbox"/> Wix |
| <input type="checkbox"/> FolioTek | <input type="checkbox"/> rCampus | <input type="checkbox"/> Wordpress |
| | | <input type="checkbox"/> Yola |

☐ Google ☐ Red Pen

☐ Other (please specify)

Briefly describe strengths and weaknesses of the technologies you are using.

Briefly describe strengths and weaknesses of the technologies you are using.

Besides the role(s) you noted above, what other professional/vocational/personal activities or roles are currently important to you?

Besides the role(s) you noted above, what other professional/vocational/personal activities or roles are currently important to you?

What skills, abilities, knowledge, and experience do you bring to this class (don't be shy!)?

What skills, abilities, knowledge, and experience do you bring to this class (don't be shy!)?

What skills, abilities, knowledge, or experiences do you hope to gain or advance as a result of taking this course?

What skills, abilities, knowledge, or experiences do you hope to gain or advance as a result of taking this course?

Describe a course, training program, or other formal learning experience that really "worked" for you and describe why it worked for you.

Describe a course, training program, or other formal learning experience that really “worked” for you and describe why it worked for you.

In general, describe assignments or courses that don’t work for you (no need to “name names”), particularly in online environments.

In general, describe assignments or courses that don’t work for you (no need to “name, names”), particularly in online environments.

I would like to use the textbook as a resource that works FOR you. Please review the book’s table of contents and offer your thoughts on what is most exciting about the book and what topics might be missing that you hoped to be discussed in this course. I will attempt to find resources that address as many of the topics identified by students as possible.

By the end of this week of August 26th I will have designed a course based on my goals as your instructor and, AS IMPORTANTLY, your collective goals for the course. By Friday, August 30th, you will receive the syllabus via your University of Idaho email and our bblearn site will be “live.” In the meantime, please read the first 60 pages of our textbook. I am looking forward to our time together.

If you are interested in learning more about the AAEEBL research study, please contact Gary Brown (garyrobbrown@gmail.com), Helen L. Chen (hlchen@stanford.edu), or Aifang Gordon (aifang@pdx.edu).

Appendix B
Assignment #2

Who Taught Me What Teaching Means

Fall 2013, Assignment #2

Due by midnight September 1, 2013

[Note to students enrolled in both AOLL 573 and AOLL 575. Please post your essay in both bblearn sites].

If we work, attend school, volunteer, parent children, and interact with others in other settings we are teaching. Teaching (defined as facilitating the learning of others) occurs in both formal and informal environments. Even still, most of us learned what being a teacher means from formal school and/or work-place training settings. Some of your assumptions about teaching learned from these teachers shaped the way you answered our opening survey.

Your assignment: In a maximum of 400 words, describe the actions of at least two teachers (in formal classroom or work-place training settings) who had the most powerful impact on your understanding of what it means to teach. Be sure to consider your answers to the survey you completed earlier this week. The teaching actions you describe in this essay are likely to be consistent with your survey answers.

Post your essay as either a word processing (i.e., Word) or PDF document to this blog.

Appendix C
Assignment #3 (AOLL 573)

Biographical Comparison Brookfield, Knowles, and You

Fall 2013, Assignment #3

Due by midnight September 8, 2013

To complete this assignment you will need to have read:

- Brookfield to pg. 61
- http://www.stephenbrookfield.com/Dr._Stephen_D._Brookfield/Home.html
- Malcolm Knowles Apostle of Andragogy (on bblearn site)

And watched:

- Stephen Brookfield on Critical Thinking
- <http://www.youtube.com/watch?v=Y8umk4w8kB8>

Writing for Assignment #3

This is a creative writing/media assignment of a minimum of 750 words. Using whatever mixture of photographs, art, poetry, and prose that you wish, illuminate for your reader the differences and similarities among your three subjects, Malcolm Knowles, Stephen Brookfield, and you. Speculate on how their and your life experiences may have shaped what their/your beliefs about the meaning of “good” teaching for adults. There is no right answer for this assignment. You are speculating about the links between experiences and daily practice.

I realize that a creative writing/media assignment is not typical for graduate students but allowing individuals to expand what is meant by “knowing” is one of my beliefs about education.

Post your writing as either a Word Document or PDF on the Blog for Assignment #3.

Appendix D
Assignment #3 (AOLL 575)

I Was Trained but Wish I Had Been Educated Essay

AOLL 575

Fall 2013, Assignment #3

Due by midnight September 8, 2013

Minimum word count: 1,000

The authors of your textbook describe the difference between traditional “training” and “educating.” I would like you to:

1. Describe a personal experience in which you were “trained” but not “educated.” Provide enough detail of this experience to allow your reader to see traditional training in action.
2. Analyze this experience using ideas from the textbook and other resources if you wish to demonstrate how this was training and not educating.
3. Now retool this “training” into an educational experience. Assume you have the same amount of funding and level of other resources as the person/people who offered your actual training.
4. Offer a justification for why this is educating and not training.

May I suggest?

If you are getting stuck on this assignment, reading farther forward in your textbook or conducting a bit of research online may help. Remember to cite your sources.

Appendix E
Assignment #4 (AOLL 573)

Reader Response 1

Fall 2013, Assignment #4

AOLL 573

Due by midnight September 15, 2013

One of our members, [NAME], has had to leave school this term. I am sure she notified you [NAME], [NAME], and [NAME]. I'm sorry to see her go. Below are the new team configurations. Please collaborate within your teams to assign a respondent to each other's work. Remember to read ALL work done by everyone in the class (it is a small class so this should not take long).

Teams:

Team Green: [NAMES]

Team Blue: [NAMES]

Team Gold: [NAMES]

Team Silver: [NAMES]

How to respond:

For this assignment (#4) you will be identifying three types of teaching/training behaviors in your respondent's writing on Assignment #2 and #3 (respondent is not a real word but you know what I mean). These behaviors are neither good nor bad they just are.

Teaching-centered beliefs are represented in practice when it is predominantly the faculty member/trainer who determines not only what is to be learned and how that learning is to be measured, but also by structures and sequences of activities that are determined and controlled by the instructor.

Learner-centered beliefs are represented in practice when it is still the faculty member/trainer who determines what is to be learned but unlike teacher-centered beliefs, learner-centered practices encourage emerging student agency by engaging students more fully in the process of determining answers or solutions as well as modes and avenues for presentation. Learner-centered practices often situate learning in ill-structured domains that often do not have clear correct answers.

Learning-centered practices are represented in practice when the faculty member/trainer invites learners to have some determination in not only how the work will be pursued and represented, but also in determining what it is that is necessary to learn. In learning-centered practice it is presumed that students will collaborate, employ peer review, and *network* to inform their learning.

Below is an example of how I would code my respondent's writing to identify which kind of behavior you see. For this example, I have cut and pasted the respondent's writing into this document (thank you [NAME]—chosen at random—for allowing me to use you as an example. [NAME] respondent, please go ahead and respond to her work too (you may have different codes than I do!):

One student's writing on Assignment #2

The first of the teachers was my previous supervisor, [NAME]. I worked with her in [NAME]. I looked up to her as a mentor. She taught me how to listen, hear what was being said, and make a plan to move forward. I have gained many of my mentor/coaching skills from watching her. She had an amazing way of encouraging people come to conclusions on their own. She didn't realize she was teaching me but I was learning from her daily. People can influence and teach through example. [NAME] was the perfect example of this for me.

Another person who has taught me what teaching means was another co-worker. Working with children as an Early Childhood Teacher at Head Start in my earlier days, I was very fortunate to be able to work with Sherry. She was an amazing calm person who watched for those "teaching moments" with the children. Teaching was not sitting in front of the class and pointing to a letter and asking the children to repeat it. She individualized

learning for each child and took time daily to work with that child. She knew how they best learned and worked to meet each child's needs. This taught me that every person is different and not one thing works for everyone. Taking the time to work one on one with someone can make all the difference in the world to them.

I could go on about amazing people in my life that I have learned from. The list would include professors, like [NAME], and family members, such as my father, and other co-workers. In thinking about this and looking back at learning moments for me, the string that ties all of them together is that they individualized the learning. This exercise has also made me realize that I tend to learn through example.

One student's writing on Assignment #3

Recently I attended training for work. To be honest, I was not eager to go. I just knew we would be sitting in a room while the training went through a series of steps trying to explain changes in a statewide project. To my surprise the trainer started the training off by asking us to individually write any questions we may have and placing them in the middle of the table. She then took all the questions and posted them on the wall. She then read the questions out loud. She asked the full group to help group them having the group develop and decide the names/title of each grouping. She then discussed the changes and the information for each grouping while answering the questions. After the discussion she had us do the project again but this time we were to discuss the questions as a table and place them on the wall. We then divided the questions into the proper grouping again, as an entire group. Answers were then given again. The large group was allowed to offer suggestions and input. Questions were asked, questions were answered, discussions occurred, and learning happened. Experiences were discussed and examples were given. This was a critically thinking project by the participants and guided by the trainer.

"A wise man can learn more from a foolish question than a fool can learn from a wise answer." Bruce Lee

Malcolm Knowles' experience as the director of adult education at the YMCA gave lead to his description of "good" teaching. Acknowledging that teachers need to care about learners interests rather than what the teacher believed the learners need to know (Carlson, 1989, p.3). His focus was on self-directed learning. Naming his practice "Andragogy" and providing guided interactions he considered himself a facilitator of learning rather than a teacher.

Stephen Brookfield learned about "good" teaching through his life experiences. Like me, Brookfield was not the best student growing up. He struggled with tests and formalized education. Brookfield, like Knowles, believes that questioning the students about their learning interest and let it guide the learning process. He focuses on critical thinking making others aware of assumption in the way we think and act and then taking informed action. Brookfield notes that modeling, real life experiences, and feedback are valuable tools for critical thinking.

"Education is what remains after one has forgotten what one has learned in school."

Albert Einstein

Like Brookfield and Knowles I believe by asking questions we begin "good" teaching. I recall one of the best college educational experiences I had. It was a course that was taught by an adjust teacher. Like the experience Knowles had at the YMCA, this teacher brought in real life situations, was able to walk us through actual process with modeling. He asked what we desired to learn and prepared lessons according to our needs. I was able to take what was taught in class and put it to use at work. When consulting child care directors, I begin the process with a series of questions to see where to begin and what to plan. I use modeling to help critically thinking and lead them in the desired direction of learning. I normally work one on one with my clients. This allows me to personalize the trainings. I find the more I personalize it by telling stories of similar situations, the more willing the provider is to participate.

"Tell me and I forget. Teach me and I remember. Involve me and I learn."

Benjamin Franklin

Malcolm Knowles, Stephen Brookfield, and I have all experienced learning through life experience. Life experiences make us who we are and teach us valuable lessons. Through example, modeling, and questioning we will continue to teach and learn. Learning goes beyond the classroom, it is more than lectures, stories, and readings. Learning happens daily. We learn from each other and from their experiences. Watching our parents, listening to friends, and observing others, we are learning. If it be at work or at a social event we learn how to perform tasks, how to act in certain situations, and how others may react to those situations. Sharing our experiences with others and questioning why, we help each other learn.

“There is no end to education. It is not that you read a book, pass an examination, and finish with education. The whole of life, from the moment you are born to the moment you die, is a process of learning.” Jiddu Krishnamurti

Now, back to how to respond for Assignment #4. After you have finished coding (you don't have to use highlights if you don't want to just make sure you've identifying the three types of teaching somehow). In 750 words (or so, if you go a little over that's PERFECTLY OKAY) address the following:

1. Who are this person's most important teachers?
2. What are this person's preferred ways of learning?
3. Are these ways of learning predominantly teacher, learner or learning centered?
4. How are these ways of learning the same and different from how you learn?

Post your writing to the blog by midnight September 15.

Reader Response 1

Fall 2013, Assignment #4

AOLL 575

Due by midnight September 15, 2013

One of our members, [NAME], has had to leave school this term. I'm sorry to see her go. Below are the new team configurations. Please collaborate, within your teams, to assign a respondent to each other's work. Remember to read ALL work done by everyone in the class (it is a small class so this should not take long).

Teams:

Team Green: [NAMES]

Team Blue: [NAMES]

Team Gold: [NAMES]

Team Silver: [NAMES]

How to respond:

You will be identifying three types of teaching/training behaviors in your respondee's writing on Assignment #2 and #3 (respondee is not a real word but you know what I mean). These behaviors are neither good nor bad; they just are.

Teaching-centered beliefs are represented in practice when it is predominantly the faculty member/trainer who determines not only what is to be learned and how that learning is to be measured, but also by structures and sequences of activities that are determined and controlled by the instructor.

Learner-centered beliefs are represented in practice when it is still the faculty member/trainer who determines what is to be learned but unlike teacher-centered beliefs, learner-centered practices encourage emerging student agency by engaging students more fully in the process of determining answers or solutions as well as modes and avenues for presentation. Learner-centered practices often situate learning in ill-structured domains that often do not have clear correct answers.

Learning-centered practices are represented in practice when the faculty member/trainer invites learners to have some determination in not only how the work will be pursued and represented, but also in determining what it is that is necessary to learn. In learning-centered practice it is presumed that students will collaborate, employ peer review, and *network* to inform their learning.

Below is an example of how I would code my respondent's writing to identify which kind of behavior you see. For this example, I have cut and pasted the respondent's writing into this document (thank you [NAME]—chosen at random—for allowing me to use you as an example. [NAME] respondent, please go ahead and respond to her work too (you may have different codes than I do!):

Who Taught Me What Teaching Means

Fall 2013, Assignment #2

AOLL 575

Due by September 1, 2013

One student's writing on Assignment #2

I have learned from many great teaching examples throughout my lifespan. Some of my teachers were not the best and I learned what not to do. Other teachers were amazing, inspiring me to be a better student, person and leading me to work with families as a teacher. I could list several people that inspired me, however, the two that first came to mind were my preschool teacher and latter my high school teacher, Mrs. [NAME] and one of my professors at [INSTITUTION NAME].

I first met Mrs. [NAME] when I was four and had my first experience with school. She was the head preschool teacher at the [INSTITUTION NAME] preschool. This program not only taught preschoolers the first skills they needed for school but also taught high school students how to work with young children. I remember Mrs. [NAME] was a kind woman. She taught me to share what I had with others through kind words and encouragement. Mrs. Finely read books in such a way that I was enraptured by the story she was telling. She always got down on my level to listen and talk to me, and I believed she thought what I had to say was the most important thing ever to her. As a senior I took the class she taught for Early Childhood Certification. She taught us to listen to children, asked us to think about what we enjoyed as a child and what we were really teaching to each child. Mrs. Finely was the first to influence my perceptions of children and how they learn. The second was professor [NAME]. She is a phenomenal teacher that taught at the [INSTITUTION NAME]. She would pose questions and discussions that really made me think about what I wanted from myself as a professional and how I wanted to support others. [NAME] is amazing in teaching concrete concepts with real examples making them memorable. She is one of the very few teachers at the University that truly believed each student had valuable experiences that could help us in our field working with families. [NAME]'s classes were often a discussion and not a lecture. When you turned in assignments the most important thing was not that it was written without error, which was important, but the content mattered and showed that I knew the information and applied it correctly.

Many people have inspired me to be who I am today. I am sure that there are many more that will continue to lead me down the path I am creating for myself. I look forward to meeting them as I go. I was trained but I wish I had been educated!

Fall 2013, Assignment #3

AOLL 575

One student's writing on Assignment #3

Training verses educating, well those are two very similar yet different things. When I think of trainings I think of workshops that help hone my skills and give me applicable knowledge. When I think of education I think of school and classes. I consider both necessary and useful, however I am typically more excited for trainings because they are usually about a topic I am invested and interested in and classes, I do not always enjoy the content nor does it always hold my interest, especially when it's another boring lecture.

Let's start with training. When I first thought about training I thought about a First-aid/CPR course I just attended to become re-certified. This was unique because I had been certified previously but it was time to renew my knowledge. I went into the class knowing it was needed to ensure the safety of the children and staff that I work with on a daily basis. The instructor for the training started with asking us what our professions were and how we would use this knowledge. I noticed through the training he

used examples of our “related work experiences” to help us understand and apply what he was teaching us. As the book states, he used “Prior knowledge *that* helps the learner acquire additional knowledge or skills more rapidly” (Stolovitch & Keeps, 2011 p.41). Using prior knowledge helps the learners retain the information in a more useful way. The basis of the course was the instructor teaching us techniques through video or demonstrations. At the end of the instruction we practiced on the dummies and there after, were tested on our abilities for certification. The instructor used many different mediums in which to deliver the knowledge, all of which created a way for the learners to retain it. I was motivated to learn the materials for two reasons, the first being that I could not do my job without the certifications and the other was the overall concern for the safety of those with whom I work. I already knew the basis for the materials, the training provided me with additional confidence that if the time came to use these skills, I would be able. “The optimal point of motivation is where the learner has enough confidence to feel she or he can succeed, but not so much that the desire to learn declines” (Stolovich et al., 2011 p.42). My desire to learn was still present because of the updated practices from the last time I was certified, and if I had not attended the course, my skills would have been outdated and perhaps cause more harm than good.

When I think of educational experiences the first thing that comes to mind is school and classes. Because there are many ways a class is taught it is broad to say that all classes are taught to educate and not train. I have had both types of classes. Educated classes typically were very broad and covered a large range of topics in one specific field of study, for example, Statistics. After taking statistics I know there others with the gift for this knowledge and I am not one of them. I would rather focus on areas that interested me and leave the numbers to the experts. I attended statistics because my degree required it. If statistics were training, I would never attend. The educational knowledge I gained from taking this class was valuable in that it taught me the knowledge I needed to read and interpret data studies. I learned why statistics is important and how it would apply to my area of interest. This encouraged me in learning how to apply and learn only what I needed to in order to get by and gain the correct grade for completion. When I compare my CPR/First-aid training to my statistics class, a few things stand out in my mind. I have retained more knowledge from my training than from my class. If you asked me to perform CPR on an infant, I would know exactly what I needed to do. I would follow the steps from my training and hopefully, be successful in reviving the child. In comparison, if you asked me to plot the data, come up with the mean and medium for the data and tell you the significance, I would fail. Doing that would require me to open my books, find a great computer program and re-learn how to solve those problems. If you were to present me with the data already set out, I would know how to interpret it with a little help from statistical resources. I could know what the data meant to me and my study and apply it appropriately. Essenhigh (2000) stated, It’s the difference between, say, being trained as a pilot to fly a plane and being educated as an aeronautical engineer and knowing why the plane flies, and then being able to improve its design so that it will fly better (p.46). I was trained how to perform CPR and First-aid but I was educated on why statistics was important and why I needed to know the information to apply it in my research.

I know I benefited from both the education from statistics and training in CPR/First-aid. I believe had the statistics class been tailor especially to qualitative research, and applied to how I was going to be using statistics I may have been better able to remember and apply the knowledge without the added help of books and outside resources. Stolovitch and Keeps make it clear in the first several chapters of their book that when the learner is interested and invested in the training topic, the experience is easier to retain, applied in their vocation and use as a teaching tool to those they work with that did not get the same training.

Now, back to how to respond for Assignment #4. After you have finished coding (you don’t have to use highlights if you don’t want to just make sure you’ve identified the three types of teaching somehow). In 750 words (or so, if you go a little over that’s PERFECTLY OKAY) address the following:

5. Who are this person’s most important teachers?
6. What are this person’s preferred ways of learning?
7. Are these ways of learning predominantly teacher, learner or learning centered?
8. How are these ways of learning the same and different from how you learn?

Post your writing to the blog by midnight September 15.

Using an ePortfolio to Assess the Outcomes of a First-Year Seminar: Student Narrative and Authentic Assessment

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ePortfolios have been looked to as a tool for the direct assessment of student learning. Because the evidence used for assessment is actual student work, ePortfolios provide a view of learning that is not available through traditional methodologies such as student surveys and exams. This research examined 47 student ePortfolios completed as part of a first-year seminar course. Learning outcomes were assessed using both a rubric and identification of authentic evidence in the form of words and phrases to support rubric scores. Findings indicated that the ePortfolio is a rich source of evidence from which to assess learning and the authentic evidence was closely aligned with rubric scores. Rubric scores indicated the level of learning that occurred while student narrative provided insight into the level of student thinking and depth of thought around particular topics including understanding of self and exploration of majors and careers. When coupled together, an analytic rubric and examination of student narrative as authentic evidence provided a robust methodology for assessing student learning.

As institutions across the United States seek to find ways to increase graduation and deepen learning, educational strategies including intrusive advising and mentoring, engaging classroom pedagogies, and high-impact practices are increasingly being implemented on campuses and in classrooms. Many campuses have focused on first-year students in an effort to build foundations for critical thinking, engagement on campus, and commitment to college completion. Others have used ePortfolios as a tool for assisting students in deepening and documenting learning in a course, academic program, or across the college experience. Regardless of the strategies implemented, most institutions have measured the success of initiatives using quantitative data such as grade point average, retention rates, and graduation numbers.

This paper presents research completed to explore the outcomes of two educational strategies, first-year seminars and ePortfolios, in a way that goes beyond traditional quantitative measures of success. Using student narrative in an ePortfolio as authentic evidence of student learning, researchers sought to determine the level of achievement for five learning outcomes associated with a first-year seminar course.

Literature Review

ePortfolios

The electronic portfolio (ePortfolio) has emerged over the last decade as one tool for responding to the pressures facing higher education in the areas of assessment and accountability for student learning outcomes (Cambridge, 2001; Chen & Penny Light, 2010; Watson & Doolittle, 2011). Banta (2003) posited that “portfolios enable faculty to see firsthand not only

what students are learning, but *how* they are learning” (p. 2) in addition to the observation that “portfolios also can play a role in assessing the effectiveness of the courses, curricula, and even institutions” (p. 4). The ePortfolio is also used to support and document the personal, professional, and intellectual development of students (Watson & Doolittle, 2011).

Zubizarreta (2004) referred to portfolios that support student’s affective and cognitive development as learning portfolios. Learning portfolios can be used for a variety of purposes across a range of settings including the classroom, co-curricular programs, and at the program or institutional level. Across purposes and settings, Zubizarreta (2004) suggested all learning portfolios have three primary components: (a) documentation as evidence and outcomes of learning, (b) reflections on learning, and (c) collaboration and mentoring most often in the form of faculty feedback. Frequently, learning portfolios are structured to serve as living documents that emphasize the learning that occurs through the process of developing a portfolio, rather than the portfolio itself as an outcome (Seimens, 2006, as cited in Garriss, 2007). Because the focus of learning portfolios is on the individual’s orientation and process of learning, they often are considered to be personal or developmental portfolios.

While some see the use of portfolios for assessment and learning and personal portfolios focused on learning process and student development as two distinct types of portfolios, Cambridge (2010) posited that they both contribute to the ideal of authenticity where authenticity is undergirded by, “the principle that we do not really understand our unique selves or participate fully in life until we express our natures” (p. 13). Portfolios designed for assessment purposes allow for measurement of student learning against an established standard while

personal portfolios allow the learner to define and narrate their learning as they see it. Both provide significant information on learning to the institution or program as well as the student. Therefore, the potential for ePortfolios as tools for both assessment and support for student learning is tremendous and this potential can be maximized if the portfolio is developed beginning in the first year of college.

First-Year Seminars

It has long been recognized that the first year of college is a significant point in time for both the student and the institution (Barefoot et al., 2005). From the student perspective, this is a year of significant challenge and change. Students are faced with having to engage in independent decision-making, more rigorous classroom expectations, interacting with diverse people and perspectives, and a maturing sense of identity. From the institutional perspective, assisting the student in developing the knowledge, understanding, and skills that promote college success reduces the large rates of attrition seen between the first and second year of enrollment. A wide array of institutional interventions to support entering students have been employed at campuses across the United States including orientation programs, learning communities, academic advising, supplemental instruction, and first-year seminars (Upcraft, Gardner, & Barefoot, 2005).

First-year seminars are as diverse as the institutions offering them. They may be academically-focused and tied to an intellectual theme, focused on basic study skills, or serve as an extended orientation to the campus—or a combination of all three (Griffin & Romm, 2008). The seminars may serve beginning students in their first semester or through the first-year of enrollment, be offered for credit or not, and be graded or marked pass-fail. Similarly, assessment methodologies for first-year seminars are as varied as their purposes, ranging from analysis of GPA and retention to measures of critical thinking and civic engagement.

Kuh (2008) argued that first-year seminars and experiences are one of 10 high-impact practices that increase student engagement and learning. The most successful seminars focus on engagement of students through critical inquiry, frequent writing, information literacy, and collaborative learning. Kuh and O'Donnell (2013) went on to indicate that in order to be considered “high-impact” in their efforts to foster outcomes such as improved retention, on-time graduation, and deeper learning, practices such as first-year seminars must meet eight conditions: (1) performance expectations must be set at appropriately high levels; (2) students must invest significant time and effort over an extended period of time; (3) students must interact with faculty and

peers about substantive matters; (4) students should have experiences with diversity; (5) instructors should provide students with frequent, timely, and constructive feedback; (6) instructors should provide students with periodic, structured opportunities to reflect and integrate learning; (7) students should have opportunities to discover the relevance of learning through real-world applications; and (8) students should publicly demonstrate their competence. These conditions are also foundational principles for the use of ePortfolios. In a first-year seminar, over the course of the first semester or year of enrollment, the use of a personal or learning portfolio can be a pedagogical technique to engage students in using reflection to think critically about themselves and apply their learning to their college experience while receiving feedback from a faculty member. Thus, ePortfolios, like the first-year seminar, are quite likely a high-impact practice.

ePortfolio as Authentic Assessment

The electronic portfolio has become increasingly attractive to faculty who seek a more comprehensive insight into and interactive approach with respect to the authentic assessment of their students' process of learning and development (Banta, 2003). The notion of authenticity in assessment is based on the idea that a more representative evaluation of a student's learning is based on evidence that represents a reflective, intentional timespan rather than arbitrary points in time. According to Cambridge (2010),

Putting the ideals of authenticity and deliberation into action, ePortfolios offer one means of generating a comprehensive account of students' experience of ineffable outcomes, having the promise to capture the complexity and context of students' learning in ways that more conventional kinds of assessment cannot. (p. 118)

The ePortfolio is a natural fit for a high impact practice such as a first-year seminar because of the integrative learning opportunities fostered by this structured reflection and assessment framework. Established learning outcomes can be assessed by either formative or summative means through a wide range of authentic evidence documented by a student over time (Banta, Griffin, Flateby, & Kahn, 2009). “As ‘containers’ of authentic evidence of student work, e-portfolios can serve as a catalyst for conversations among faculty and other stakeholders within departments and programs about common learning outcomes, coherence among courses, and professional development” (Chen & Penny Light, 2010, p. 3).

Bringing it All Together

At Indiana University-Purdue University Indianapolis (IUPUI), all first-time full-time students are required to enroll in a first-year seminar course during their initial semester of enrollment. The course aims to support students in building a solid foundation for college success. Students are introduced to key information and skills needed to succeed at IUPUI as they explore the academic culture of the campus. One of the foundational goals of the course is to have students complete an electronic personal development plan (IUPUI, 2010).

The electronic personal development plan (ePDP) is a process that enables students to understand, implement, and chart progress toward their degree and college goals and, in doing so, become empowered to take charge of their own education. Specifically, the ePDP is a personal, developmental ePortfolio designed to foster goal commitment, academic achievement, curricular coherence, meaning-making, and student development (IUPUI, 2012). Students complete guided reflection prompts across seven distinct sections: About Me, Educational Goals and Plans, Career Goals, Academic Showcase, My College Achievements, and Resume. The guided prompts are aligned with stated learning outcomes and are evaluated using rubrics based on elements of critical thinking and cognitive development. Faculty are free to integrate as many or as few of the sections into their course as they see fit. Through professional development workshops, faculty are encouraged to purposefully scaffold each section, as well as the entire portfolio, into the course. As a result, students enrolled in a first-year seminar course in which the faculty member has chosen to use the ePDP as a tool for learning and development leave the course with a foundational portfolio that provides guidance throughout their college experience and serves as a repository for evidence and reflections on their learning.

Research Aims

The purpose of this research project was to use the student narrative found in the ePDP as a source of authentic evidence to evaluate the stated outcomes of a first-year seminar. Specifically, this project sought to evaluate evidence of the stated learning outcomes for the ePDP across the portfolio as a whole—rather than within each individual section of the portfolio, which is the current practice associated with grading the ePDP as a class assignment. The articulated learning outcomes for the ePDP as utilized in first-year seminars are:

- Self-Assessment and Awareness: students will identify success-related competencies.

- Exploration: students research and identify realistic and informed academic and career goals.
- Goal Setting: students set short and long term goals as well as connect personal values and life purpose to the motivation and integration behind their goals.
- Planning: students locate programs, information, people, and opportunities to support and their goals and engage in reality checks.
- Evaluation: students analyze their academic programs in terms of progress toward academic and career goals.

Method

According to Hansen and Borden (2006), “action research facilitates the connection between evaluation research results and program improvement” (p. 49). This project is a type of action research, as it sought to evaluate student learning outcomes in order to facilitate improvement in both the first-year seminar and the use of an ePortfolio as a tool for supporting learning within the course. Because the principal investigator in this project is also the project coordinator for the ePDP, the project supports Craig’s (2009) assertion that action research is conducted by a practitioner studying an existing issue for the purpose of improvement.

Qualitative research is best used when the research is focused on “process, meaning, and understanding in words and pictures” (Creswell, 1994, p. 145). Since this project is focused on finding evidence of learning in student narrative, qualitative research methods were employed. This research orientation allows for the development of thick description that can describe and explain the data in a way that allows for a holistic perspective and understanding. Further, qualitative methods allow for inductive analysis in which the findings emerge from the raw data—in this case—student narrative.

Selection of Portfolios

This study was conducted at IUPUI in the fall 2012 semester. Beginning freshmen student enrollment was 2,811, of which 2,430 (86.4%) were enrolled in a first-year seminar course during their first semester of enrollment. Of the 121 sections of the seminar being taught that term, 45 of these sections used the electronic ePDP in the course for a total of 898 students completing an ePDP. Informed consent forms were distributed to each class for students to provide permission for their ePDP to be used in institutional research; 397 students provided this consent. From the population of portfolios for which consent was provided, an initial attempt was made to randomly

select a representative sample of 50 portfolios. However, due to security problems that impeded access to individual ePDPs in the portfolio platform by the researchers, the project used convenience sampling. The 397 student portfolios were sorted by class section and then randomized to ensure distribution across first-year seminars. An attempt to access each portfolio was made with 12% being accessible to researchers in the ePortfolio platform. This sampling technique resulted in a total of 47 portfolios analyzed for this study. These portfolios were implemented in 15 different class sections of the first-year seminar, taught by 13 different faculty members. Seventy-eight percent of the portfolios were completed by female students.

Development of the Rubric

The generally accepted definition of a rubric states that it is a tool used in scoring qualitative student work that includes both dimensions of performance and standards for achieving stated criteria (Jonsson & Svingby, 2007). Holistic rubrics provide one score for the entire product, while analytic rubrics judge essential components separately (Arter & McTighe, 2000). For this study, an analytic rubric was developed so that each learning outcome could be scored. According to Banta et al. (2009), "Portfolio assessment of key outcomes can be graded using rubrics, yielding numerical scores that are reasonably reliable" (p. 11), if deliberate, considered effort is made to design and test the rubric.

Specific to this project, two earlier faculty committee-generated documents were identified by the research team as key to anchoring rubric development. The PDP Learning Outcomes were expanded and then mapped to sections of "A Template for First-Year Seminars at IUPUI" (IUPUI, 2010), referencing the learning outcomes related to the Personal Development Plan. The descriptive characteristics of each rubric cell emerged as common themes were noted and the remaining outcomes and goals documented. Evaluative levels of achievement were guided by Bloom's Taxonomy of Educational Objectives (see Gronlund & Brookhart, 2009) and Paul and Elder's (2009) model of critical thinking. Specifically, evaluative levels were anchored around the constructs of knowledge, comprehension, application, and analysis. As a final step in the development of the rubric, the learning outcomes stated in each rubric cell were mapped to the current guided prompts provided in each section of the ePDP and then examined against the compatibility of the associated evaluative levels.

The rubric was then piloted with three faculty members who had used the ePDP in their first-year seminar course for at least two semesters. The faculty members were asked to use the rubric to evaluate one

common ePDP and then a second ePDP of their choosing drawn from their own course. The group then provided feedback that informed the final iteration of the rubric used in this study.

Data Collection and Analysis

An email was sent to all faculty who used the ePDP in their first-year seminar course during the fall 2012 semester inviting them to participate as raters in this study. Raters were provided with a gift card to the campus bookstore for their participation. Eleven faculty initially agreed to participate, with 10 ultimately following through on their commitment. The 10 faculty were each assigned nine or 10 ePDPs to review, so that each portfolio was scored by two reviewers.

The most common type of reliability associated with the assessment of student work is inter-rater reliability. Inter-rater reliability is enhanced through a well-designed scoring rubric as well as by developing both consensus and consistency. Consensus refers to the degree to which raters provide the same score, while consistency provides a measure of correlation between the scores of the raters (Reddy & Andrade, 2010). Pilot testing of the rubric helped to ensure that the rubric was well-designed and provided initial feedback on levels of consensus. In order to enhance reliability, data collection occurred on the same day, with all reviewers in the same room. The session began by testing the rubric with two sample ePDPs. As raters compared and discussed scores, clarification was provided for wording within each cell, and scoring norms were agreed upon.

After the initial introduction, which focused on developing inter-rater reliability, raters were asked to complete two tasks. First, raters provided a score for each competency on the rubric. Second, and most important for this study, raters highlighted words and phrases that supported their rubric score. Highlighting was done with colored markers so that student narrative could be associated with a specific learning outcome (e.g., all narrative that was evidence of self-awareness was highlighted in pink). The same highlighted narrative could be coded as applying toward more than one learning outcome. In addition, reviewers could highlight evidence as they saw fit. This resulted in differences in the identification of evidence; some reviewers highlighted full passages, others highlighted just phrases and words.

Only text that was highlighted was included in the transcription for further coding and analysis. All words and phrases were transcribed in a separate document for each learning outcome. The transcriptions were uploaded into ATLAS.ti, a qualitative software analysis program. Transcripts were read, and an initial list of codes was developed deductively; additional codes

emerged inductively as the actual coding occurred. Codes were applied in the form of main categories and subcategories across all learning outcomes to allow for comparison of data across outcomes. Scores were totaled and compared between reviewers; in all but eight instances (16%), the ratings differed by less than one point per learning outcome and, from this, it was determined that there was consensus in ratings and an acceptable level of inter-rater reliability.

Results

Rubric scores on each of the five learning outcomes ranged from 0 (*no evidence*) to 4 (*level of analysis*; evidence that was exhibited at the level of analysis on Bloom's taxonomy). The mean scores ranged from 1.68 to 1.16. Mean scores for each learning outcome are shown in Table 1.

While the mean scores appear to be low when considered on the four-point rubric, because the rubric was based on levels of educational objectives and critical thinking, it is reasonable to expect that lower scores would be exhibited by students in their first-semester of college. For the purpose of this research, the types and content of responses uncovered through the analysis of student narrative within each learning outcome were as critical as the absolute score.

Through coding, nine primary themes emerged across the array of learning outcomes. The number of phrases coded in each theme by learning outcome is shown in Table 2. Each phrase that was coded indicates a piece of authentic evidence identified by a faculty reviewer in support of the learning outcome. Table 1 aligns closely with Table 2 in that the outcomes with the highest rubric scores had the highest number of pieces of authentic evidence.

The largest portion of student narrative in the ePDP was associated with the learning outcomes of self-awareness and exploration of majors and careers. This finding is not surprising, given that new students are deeply engaged in decisions related to their purpose for enrolling in college, which is thought of most often in terms of majors and associated careers. In addition, because of the significant transition and newfound independence that first-year students experience, this year is also a time of reflection on one's self as established views of the self are supported or challenged with each new situation a student encounters.

What is perhaps most significant is that evidence to support the learning outcomes of self-awareness and exploration of major and career was found in narrative associated with other learning outcomes as well. This co-occurrence would appear to support the idea posited by Chen and Penny Light (2010) that "e-portfolios—as

both process and product—can promote *deep learning* and *knowledge transfer* by fostering the student's ability to make connections between his or her learning experiences in a variety of classroom, workplace, and community settings" (p. 3). Knowledge transfer, in particular, appeared to be captured by reviewers when evidence they identified was coded as meeting more than one learning outcome.

Self-Awareness

Almost half of the coded evidence for self-awareness was in relation to students' descriptions of their strengths, weaknesses, traits, and characteristics. This relationship between pieces of evidence is to be expected because the first section of the ePDP, titled About Me, asks students to describe themselves and their background as well as to discuss their personal strengths. Some students listed personality characteristics such as "slightly shy," "adrenaline junky," or "easy-going, energetic, friendly, and compassionate." Others listed strengths such as "being a leader," "hard-working," "caring," and "communication skills." While most students provided a simple identification of strengths, one student expounded by providing very detailed examples of her strengths in action, how each strength was developed, and in what ways that strength will contribute to her future success.

It was clear that at least a few sections of the first-year seminar led their students through structured activities to identify their strengths as students described their Holland career code, Myers-Briggs personality style, or results from the StrengthsQuest assessment tool in their description of themselves.

As part of the discussion of themselves, students often noted the impact previous experiences had on their development. One student stated she had participated in many arts-related programs, "which I think has helped me so much on building my creativity skills." Another, "worked around 15-20 hours a week at a restaurant, which taught me a lot about work-ethic, taking pride in things I bought for myself, and effectively managing my time." Other students listed sibling order, being raised in a rural community, their religious upbringing, or high school activities as being sources of the development of their characteristics and strengths. Participation in athletic teams was often mentioned. "I feel that baseball not only brought out the competitiveness in me but also strengthened my ability to lead" and "Being on Dance Team taught me how to jump into things and be spontaneous" are examples of student comments related to team participation.

Some students were able to tie their characteristics and strengths to success in their chosen

Table 1
Mean Scores for Each Learning Outcome

Learning outcome	<i>M</i>
Self-Assessment and Awareness: Students identify success-related competencies	1.62
Exploration of Major and Career: Students research and identify realistic and informed academic and career goals	1.68
Goal Setting: students indicate short and longer term goals as well as connect personal values and life purpose to the motivation behind their goals	1.33
Planning: students locate programs, information, people, and opportunities to support and reality test their goals	1.31
Evaluation: Students analyze their academic program in terms of progress toward academic and career goals	1.16

Table 2
Coded Phrases in Each Theme by Learning Outcome

Coded phrases	Self-assessment and awareness	Exploration of major and career	Goal setting	Planning	Evaluation	Total
Understanding of Self	1031	303	58	98	314	1804
Major and Career	83	646	171	151	74	1125
Values and Purpose	177	91	69	39	30	406
Personal Development	64	34	57	120	83	358
Grades	10	50	50	104	21	235
College Transition	2	1	5	5	105	118
High Impact Practice	3	6	32	65	5	111
Campus Involvement	2	0	18	38	13	71
Giving Back to Others	12	8	16	26	7	69
Total	1384	1139	476	646	652	4297

major and career. “My strengths are my people skills and my persuasive skills, which I believe will help me in being a lawyer” and “I want to each English so that I can share my love of reading and writing with others” illustrate of this type of linked thinking. Another said,

Anyone who has known me since birth has described me as very happy. They would say I am very compassionate. This is important to me because my dream is to work in an Emergency room, and feeling for the patients and relating to them will be very important. It is important to know the technical side of nursing but also the human side and be able to sympathize with the patient.

One more example of linking personal characteristics to major and career selection is, “Being a quiet and organized person will help me in the career in philanthropy because it is not always about being the center of attention, it’s about being respectful, organized, and hard-working—all the things I do well.”

Finally, students offered narrative that suggested they want to further develop their skills, knowledge, and characteristics through college experiences. One student stated, “If I could get myself involved in both of these areas, then I would form good communication skills, teamwork, and friendships with lots of people.” Other students said, “improve my communication skills,” “improve my time management skills,” and less specifically, “over time develop more skills that will help me be the best I can be.”

Exploration of Major and Career

The learning outcome exploration of major and career had the second highest number of pieces of authentic evidence cited by reviewers. The majority of students stated a specific major or career goal. Other students indicated an area of study that interested them such as the medical field or “working with charities.”

The focus on exploring majors and careers appeared most often in narrative related to career research. Students spoke of job shadowing and internship experiences that guided or confirmed their

choice of career. For example, a dental hygiene student said,

I have excellent verbal skills, while I did my externship at Pritchett orthodontics, I was responsible for seating patients and making sure they were comfortable while their braces were being placed on, or tightened. My eyesight is perfect, and I do fantastic with hands on. For example, my externship included me placing bands on patient's braces.

Another student stated,

After going to the cancer center . . . I definitely think I'd be interested in respiratory therapy. I really liked the relationships and achievement aspect of the job. The journey you take with each patient seems so special and to see them overcome the fight and you helped them do it seems so special.

In addition, students indicated level of education, salary ranges, and occupational outlook as evidence of their career research. "To be a teacher, you need to be patient, caring, and understanding. As a teacher, you would be teaching children new skills and preparing lesson plans. As [*sic*] teacher usually needs a Bachelors degree. According to the Bureau of Labor Statistics, an elementary education teacher makes about \$51,000 per year."

Many students wrote about the knowledge, skills, and interests a person in their chosen career must have. "Some personal characteristics of someone working in law enforcement would be someone who is a leader, confident, social, flexible, and strong willed." "Working with deadlines," "communicate with others," "empathetic," "good manual dexterity," and "honesty and humor" were given as examples of characteristics needed for success in their chosen career.

There was also evidence of students identifying characteristics, skills, and strengths they possessed and their relationships to chosen majors and careers. "I truly do have a passion for helping people" and "always had an interest in working with kids" are two such examples. One student wrote, "Philanthropic Studies will allow me to work closely with charities and really allow me to make a difference in the world." Most statements provided by students were stated in very general terms about wanting to help others, work with children, and make people happy.

Largely, the authentic evidence that spoke to majors and career selection was information-based and showed some links to self-understanding. As can be seen in the reviewers' low rubric scores, however, the evidence was not presented with a high level of critical thinking or depth of analysis.

Goal Setting

The majority of student narrative serving as evidence of goal setting was around the notion of majors and careers. Most students indicated a specific major or career objective and stated these goals. Student narrative included statements such as, "Since grade school, I have known that I wanted to pursue medical school"; "When I graduate, I would like to become a Child Life Specialist"; and "I hope to one day be promoted to a charge nurse." Students also stated goals in terms of their intended major. Others focused on more immediate goals, such as completing pre-requisite courses, changing their major, and gaining admission to a competitive academic program. Many students set specific grade-point average goals, particularly those students who have minimum grade requirements for admission to their intended major. Very few students articulated the connection between their intended major and career as well as this student, "college education with this major . . . will open many door [*sic*] to my professional goal, through the rigorous analytical chemistry specialization offered at the School of Science." Overall, students were able to state their major and career goals, but did not show clear evidence of being able to tie the major goal to career aspirations.

Some students, however, were able to identify the values and purpose that supported their choice of major or career. One student indicated that s/he wanted to "pursue a life of helping students learn." Statements of values and purpose also related to their reasons for enrolling in college. Statements such as, "I am very driven and passionate about my college education because without that life is going to be pretty tough"; "My goal is to create the foundation that helps me with my drive to get good grades and be very successful in the workplace"; and "I also want to gain the knowledge that I am going to need to know to make it in the real world" indicate that students perceive the value of college to be related to a stable economic future.

Students also articulated goals related to their personal development while in college. Some students spoke of developing skills such as time management, communication, and independence. Others spoke more broadly about their vision for their future self. "I hope that as a person, college will develop me into a more outgoing, confident human being." A common thread was for students to speak of their desire to understand different cultures. Students spoke both broadly and specifically about their desire to be exposed to diverse peoples and perspectives. A general statement was made by one student: "As a citizen, I hope to gain experiences with others from different backgrounds and walks of life, so I can better learn what it means to live and function in the society we live in." Others spoke

specifically, “I plan to travel abroad to the Dominican Republic” and

Even for just a couple of weeks I want to study in Japan. The culture has always been a huge interest to me and I would love to be involved over there with the program as it would really give me so much more knowledge then [*sic*] just the culture and volunteering here.

Overall, there was authentic evidence that students completing the ePDP were able to articulate their goals as related to major, career, and personal development. However, the degree to which students were able to state goals clearly and relate them to personal values was mixed. Very little evidence was found of students being able to weave a coherent narrative that articulated goals, the underlying values and purpose guiding the goal, and campus opportunities that would support achievement of the stated goals. This finding was shown both through the authentic evidence as well as the low reviewer rubric scores.

Planning

Evidence of student planning fell into three categories: course plans and schedules, high-impact practices, and campus resources to support achievement of goals. All three were presented by students as steps they would take to achieve their major and career goals. Course planning is a required component of the ePDP with a link directly to the student record system’s academic planner and degree audit software. All students are required to complete a two to four-year course plan. Some students provided additional lists of courses that they planned to take in order to confirm their choice of major.

Students also identified high-impact practices in which they plan to participate in order to support their learning, career goals, and personal development. It is important to note that IUPUI encourages all students to complete at least two RISE (research, international, service learning, and experiential) opportunities before they graduate. In addition to the four curricular and co-curricular opportunities in the RISE program at IUPUI, students noted plans to get involved on campus by joining student organizations or finding on-campus student employment positions that would support their networking and allow them to gain experiences related to their major.

Study abroad was the most commonly cited high-impact practice that students incorporated into their planning. Some students spoke of international study as a way to develop career-related skills in statements such as, “there are different types of diseases in other parts of the world that are not common in the US so I could

benefit by learning about the other sicknesses around the world.” Others sought to participate in international experiences for personal development: “Study abroad will help me become a better well-rounded person by learning other cultures.” Others indicated specific locales they wanted to visit due to personal interest or family heritage.

Internships were often noted as part of students’ college plans. Unlike the student narratives on study abroad, which often included a short statement as to why the student wanted to engage in international travel, students rarely indicated the benefit of an internship or what they would learn. Most students simply listed getting an internship as a way to gain experience. Two students noted the networking that accompanies internship opportunities. One student stated, “I have heard that both internship programs are good, plus there are graduating students and professors that have ties to both of them, which would make it easy for me to get one.” Another indicated, “By participating in an internship, it could help you get inside connections and potentially allow you to get a job easier.”

Students cited a wide range of people and campus resources that they planned to utilize to enhance their college and career success. Friends, campus mentors, academic advisors, and faculty members were often cited as individuals who could provide both information and support. Campus resources including the Math Assistance Center, academic mentoring sessions, and the library were referenced as academic supports that would support earning good grades. Overall, student statements about people and resources were presented at the lowest level of Bloom’s taxonomy through statements or lists of resources; few artifacts contained more in-depth information on how the resource would specifically assist the student. This perhaps could be attributable to the fact that first-year students had not yet acquired much direct experience in using these resources, though they clearly were aware that they existed and could support their college experience.

Evaluation

The evaluation outcome had the lowest rubric scores. Thus, one would expect to see the lowest number of artifacts. This expectation, however, did not hold true, suggesting that students did indeed show beginning evidence of evaluation, although their narratives reflected the lowest levels of Bloom’s taxonomy and relatively weak critical thinking. Most evidence of evaluation was related to the transition to college and understanding of self. This type of narrative is to be expected in that the first-semester of college is one in which students face great transition and, in doing so, are continuously measuring their current skills,

abilities, knowledge, and identity against new challenges and opportunities.

Most often, students spoke of the transition to college in terms of challenges faced and of what was learned. Students frequently used the phrase “culture shock” to describe the transition to college. The culture shock referred to the size of the campus, being in an urban environment, and not being with friends and family. Some spoke of independence and responsibility:

When I came to college there was [*sic*] a few things I had to adapt to right away. For example I didn’t have my parents to depend on anymore. I think this was the biggest shock for me. It was the first time I have had to fully depend on myself.

Students named making doctor’s appointments, opening bank accounts, and using an insurance card as new challenges. One student said,

It has been a struggle to figure out how to function on my own as an adult. I was never used to creating my own budgets, doing all of my own shopping, cooking, and cleaning in an apartment by myself. I’ve struggle [*sic*] with balancing these things with school.

Other students noted the differences in college-level learning. One student stated,

Going off what I said before about college being much harder than high school, I think that it is just a whole other level of learning. It is more self-learning based . . . You are just expected to figure out more on your own.

Another agreed by stating, “College learning puts more responsibility in our hands.”

Narrative did show students identifying things that assisted them with their transition to college: “I took advantage of spring and fall preview days” and “I also came [and] visited the school multiple times.” “One thing I used to help my transition in IUPUI was participating in my learning community.” Friends who had previously attended IUPUI were also named as assisting with the shift to the new environment.

Within the evaluation learning outcome, student narrative indicating self-understanding fell primarily into two categories: understanding of self in relation to others and college success skills. Students spoke about participation in activities such as visiting an area prison, volunteering at a homeless shelter, and touring facilities related to future career goals. One student stated, “[The activity] made me want to get way more involved with my community and maybe even outside of my community.” Another wrote about meeting “The kind

of people I want to work with for the rest of my life and I was more thankful for being there than they were for me being there.” Another related the experience directly to career goals: “I can definitely relate this to my future career because these are the kinds of things I want to do and the type of people I want to work with once I obtain my law degree.”

The transition to college, as related to evaluation of progress toward academic and career goals, was seen in artifacts focusing primarily on time management and the heavy load of studying. Perhaps one student said it best:

The differences in time management have been something new to college. Instead of going to school at 8 am every morning, I have to remember that I go to school at 9 am on two days and 3 pm on other days. This means that I have to set up different schedules for different days, which is not something I’m used to. I had trouble with maintaining a regular sleeping schedule, and was tired all the time. However, I have learned to go to bed at the same time each night and to wake up at the same time each morning. This kept my sleeping schedule regular, and meant that I alternated when I did other things, rather than when I slept. This was one of the most important lessons I learned this semester. Keeping on top of my schedule will help ensure that I can succeed in later semesters.

Other students spoke more generally about struggles with time and workload: “I think that the biggest challenge I faced was managing the time from homework and classes to spending time with my friends”; “Challenge in terms of finding success was time-management”; and “One of the biggest challenges I have faced this semester is time management and getting my priorities in line.” As in the previous section, one student was able to relate the insights from evaluation to career goals:

Throughout the semester I have used his tips, advice, and even his silly games to take the stress off me. This made me realize that I can actually be good at school and that I could possibly use [*sic*] these techniques with the children I want to help as a psychologist when I am older.

Several artifacts indicated evaluative insights gained from the first semester at college. One student stated, “This experience is far off from what I was told in high school.” Another spoke more specifically by stating, “College has increased my maturity, my work ethic, and my determination.”

In summary, using an analytic rubric designed to evaluate student narrative in an ePortfolio, reviewers

found low-level evidence across all five learning outcomes for the first-year seminar course. Authentic evidence supported the low-level ratings in that student narrative was presented at the initial levels of Bloom's taxonomy—primarily identification and description. It is important to note that in most cases, students do not revise and resubmit work presented within the ePDP during the first-year seminar, as it is assumed revision will occur when the students update their portfolio throughout their college career. Therefore, the low-level ratings are a measure of learning at a specific point in time and after one occurrence of responding to the reflective prompts.

As mentioned earlier, one of benefits of using ePortfolios is the transfer of knowledge across concepts. There was some evidence of this transfer of knowledge in the fact that faculty coded student phrases as aligning with multiple learning outcomes, particularly across the constructs of self-awareness and exploration of major and career. However, often students did not articulate clearly connections between learning across outcomes suggesting, again, that students were in the initial stages of this connected thinking. It is possible that the appearance of transfer of learning may have been facilitated by the order in which the seven distinct sections of the ePDP are implemented. For example, most faculty assign the foundational About Me section first, followed by Educational Goals and Plans and Career Goals. It is reasonable to assume that students might utilize the narrative provided in the About Me section to support their educational choices and career goals.

Discussion

Implications for the Use of the ePDP in First-Year Seminars

The findings of this study reveal several implications for the use of an ePortfolio in a first-year seminar course. First, in terms of the research methodology, it became clear through the coding process that while there was an acceptable level of inter-rater reliability on the individual rubric cells, there frequently were differing interpretations of the overall learning outcome. These differing interpretations were revealed when reviewers had similar rubric scores but used evidence in very different ways. For example, a student comment about wanting to help people could have been coded as an underlying value guiding choice of major and career by one reviewer (therefore supporting the exploration of major and career learning outcome), or as evidence of understanding of self (self-awareness learning outcome) by another, or even possibly both by yet another reviewer. Consistency in rubric scores suggests that the rubric was a reliable tool

for the study, but that clearer definitions and agreement on the learning outcomes needs to be developed.

In terms of implications for practice, a determination needs to be made about the level of outcome desired from first-semester students enrolled in the course. This study revealed a preponderance of rubric scores that aligned with the most basic levels of Bloom's taxonomy. These low level scores could be considered appropriate given that the students are in their first-semester of college. However, with the use of appropriate pedagogical strategies, it is possible for first-year students to demonstrate higher levels of learning. Rubric scores provided an objective measure of learning; whether or not the objective measure matches the desired learning outcome must be determined by faculty. Because the ePDP is designed for use across students' four years of enrollment, lower levels of proficiency for learning outcomes have, to date, been deemed acceptable for the first-year seminar course. It is assumed that evidence of higher levels of achievement on Bloom's taxonomy and aspects of critical thinking will be found as a student continues to revise the ePDP as they progress through college.

If, however, it is determined that a higher level of achievement is desired from the first-year seminar (on all or some of the learning outcomes), the scaffolding and guidance associated with the ePDP will need to be enhanced. For example, if greater connections between individual strengths, choice of major, and career selection are sought, students will need to be led through a series of classroom activities designed to help move students from identification and descriptions of strengths, majors and careers to provision of examples and statements of integration. Higher levels of achievement may also require more classroom focus on scaffolding critical thinking and critically reflective writing (Ash & Clayton, 2009).

Greater focus on the pedagogy associated with the use of an ePortfolio in the first-year seminar also has implications for faculty development. In fact, in the model for ePortfolio use developed by the Making Connections National Resource Center (2013) Connect to Learning project indicates that faculty development is a major component of ePortfolio implementation. As related to this study, faculty development around the meaning of stated learning outcomes needs to occur. The learning outcomes are part of a common document provided to all first-year seminar instructors (IUPUI, 2010) but because there are over 100 sections of the course offered each fall, the learning outcomes become subject to the individual interpretations of instructors. Further, faculty involved in this study had differing levels of experience using rubrics; some had used a rubric to grade the ePDP while others had not. Faculty involved in this study indicated that using this rubric helped them think through not only the outcomes and

implementation of the ePDP in their course, but also their methodology for grading. Faculty development on both grading student narrative and assessment of learning outcomes using a rubric is an important component of using an ePortfolio in a course.

Limitations

Two primary limitations must be considered when interpreting the results of this study. First, because of limited access to ePDPs in the portfolio platform, a convenient sample was used. Consequently, and keeping in mind that qualitative research is not meant to be generalized, the portfolios reviewed may not constitute a representative sample of all ePDPs submitted in the fall 2012 semester. Second, this study did not consider the implementation or pedagogical methods associated with ePDP. As mentioned earlier, each faculty member is able to implement the ePDP in their course as he or she sees fit. Therefore, it is likely that the scaffolding and guidance for reflection varied across first-year seminar sections which, in turn, may have affected the depth and focus of students' narrative.

Suggestions for Future Research

The results and limitations of this study lead to additional questions that could enhance the understanding and use of student narrative found in ePortfolios as a source of authentic assessment. Co-occurrence of evidence in this study became apparent through the numerical summary of data across learning outcomes. Because this finding arose inductively from the data, student narrative was not coded with co-occurrence in mind. Research with coding structures that clearly identify instances of one data point being used to support multiple student learning outcomes—that is to say, the ability of students to connect their learning and thinking across conceptual lines—would contribute to the literature on folio thinking (Chen & Mazow, 2002, as cited in Chen & Penny Light, 2012). Further, while inklings of the ideal of folio thinking were found in some aspects of the analysis, to truly test the power of ePortfolios as tools for students to engage in the transfer of knowledge and weave a consistent and coherent story of themselves, their college experience, and their goals, the ePDPs should be studied individually with a rubric that focuses on using aspects of critical thinking to assess the ability of the student to make connections across content and sections of the ePDP.

Conclusion

This study found that student narrative from an ePortfolio can be used as a reliable form of evidence for

authentic assessment to measure learning outcomes associated with a first-year seminar course. Findings indicated that students achieved the learning outcomes at the identification and description levels of Bloom's taxonomy and provided authentic evidence supporting these scores. The student narrative identified as evidence generally lacked the depth, analysis, and connections found at high levels of learning.

The results from this study have important implications for literatures related to ePortfolios, first-year seminars, assessment and, perhaps most important, the intersection of all three as a way to maximize the efficacy of high-impact practices and assess the outcomes of such interventions. The authentic evidence uncovered through the ePDPs supported Banta's (2003) assertion that portfolios can provide insight into what students are learning, as well as how they are learning, as both content and levels of learning were uncovered. It is posited that the degree to which student learning outcomes were met (or not met) is influenced by the classroom activities and guidance surrounding the use of the ePDP as a pedagogical tool, suggesting that learning in first-year seminars can be impacted by the inclusion of an ePortfolio. The use of student narrative as a source of evidence about learning outcomes, while time-intensive, provided depth of understanding related to student achievement that is not available through more traditional course evaluation methods. The transformation of higher education to enhance student success and learning can be maximized when powerful practices are brought together.

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A Framework for General Education Assessment: Assessing Information Literacy and Quantitative Literacy with ePortfolios

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This essay presents the findings of an authentic and holistic assessment, using a random sample of one hundred student General Education ePortfolios, of two of Salt Lake Community College's (SLCC) college-wide learning outcomes: quantitative literacy (QL) and information literacy (IL). Performed by four faculty from biology, humanities, and mathematics, the assessment underscores the benefits associated with asking students to attend to the inter-connectedness of their General Education curriculum by showcasing and reflecting on their work in ePortfolios. Using ePortfolios to assess student work invites a constructivist approach to teaching, learning, and assessment. ePortfolios contain evidence (student work and reflections) of how students are experiencing the curriculum and how they are or are not achieving learning outcomes. More important, in terms of assessment, ePortfolios promise authentic and evidence-based assessment, as well as a potential for closing the loop.

Background: Theoretical Framework and Implementation

Existing and emerging technologies have changed the way in which students learn and experience higher education, especially in terms of access, analysis, and use of information (Siemens, 2004). These technologies allow students to inhabit numerous co-present academic, community, and personal environments. Salt Lake Community College (SLCC), like many institutions of higher education, recognized the contributions these environments make in shaping and reshaping students' educational experiences (Tosh, Werdmuller, Chen, Penny Light, & Haywood, 2006). In 2010, SLCC implemented an ePortfolio requirement for all its general education courses in recognition of the changing educational landscape and the institution's outcomes assessment mandate (U.S. Department of Education, 2006). Students use any suitable Web 2.0 platform with which to build their ePortfolio. They own their ePortfolio and share its URL with SLCC's Banner student information system, which makes it available to the faculty via their online course rolls.

Our ePortfolio implementation is structured around the reality that learning occurs in a community (disciplinary, cultural, geographic, and/or digital), not in isolation (Senge, 2000), and that evidence-based outcomes assessment can occur only by using student work and examining that work holistically. A holistic approach to evidence-based assessment is the only place in which assessment teams can gain an insider's view of how students experience general education. SLCC student ePortfolios accumulate, to use the words of Finley (2012), "assignments designed to provide students with opportunities to demonstrate their learning for each outcome as individuals and within groups" (p. 22). Students include evidence of their varied academic and personal experiences, which they

connect to each other through intentional reflections. The types of evidence students create and then showcase include academic, real world, and co-curricular experiences and projects, all of which can be communicated through mixed media.

Research shows that ePortfolio pedagogy (showcasing skills and achievements, reflecting, and using appropriate communication modalities) encourages constructivist and connectivist approaches to teaching, learning, and meaningful assessment. Schneider and Rhodes (2011) explained the impact of portfolio pedagogy on student learning and what can be understood about that learning from an assessor's vantage point:

Significantly, the emerging evidence on portfolios of student work suggests that applying knowledge, integrating learning from multiple sources, and reflecting on the process of learning, its quality, and the outcomes—the how and the why of learning—further strengthens student learning" (p. vi). Reflection serves its own unique purposes in our ePortfolio implementation. As Cambridge (2010) wrote, "Almost without exception, scholars agree that the process of reflection that goes into composing an ePortfolio is central to its impact on learning. (p. 103)

Reflection forces students to both routinely take a step back from and return to their work, placing that work into broader personal or intellectual contexts. From a Deweyan perspective, reflection gives a learner "increased power of control" of their learning (Dewey, 1933, p. 21).

SLCC's reflective framework is based on Dewey's (1933) reflective principles, the models of Schön's (1983) reflective practice, Kolb's (1984) model of experiential learning, and mathematician

Pólya's (1957) "look back" strategy for solving problems. Faculty ask students to consider their learning processes, evaluate their own work (e.g., what they did, what went right, what went wrong, what is missing), think about their thinking and how it changed during the course, and to make connections between assignments in one course and those in other courses that the student has taken. An unanticipated benefit of student reflection is that it provides important feedback to faculty regarding the impact and effectiveness of their assignments.

Indeed, the promise of ePortfolios is that stakeholders get authentic assessment (Cambridge, 2010) because ePortfolio pedagogy invites self-assessment for students via their reflections, curriculum assessment for faculty from student reflections, and programmatic assessment for institutions when ePortfolios are examined holistically. ePortfolios, when used as spaces for learners to shape and share the connected stories of their academic lives and when used for assessment, can play a central role in closing the loop for institutions, faculty, and learners. In their book, *The Educational Potential of E-Portfolios: Supporting Personal Development and Reflective Learning*, Stefani, Mason, and Pegler (2007) contended, "authentic assessment must be built upon authentic learning experiences. The e-portfolio can be helpful here in recording the authentic learning, by allowing students to compile different kinds of evidence of learning" (p. 75). At SLCC, faculty in all general education courses require that students showcase, in their ePortfolios, at least one signature assignment from the course accompanied by a reflection on the assignment or the course.

Signature assignments constitute real-world applications of knowledge (i.e., not exams or quizzes). To qualify as a signature assignment, an assignment or project must help students address two or more of SLCC's general education learning outcomes. Thus, a student paper on the campaign financing of incumbents and challengers in recent Congressional races would be a signature assignment that addresses SLCC's effective communication and quantitative literacy learning outcomes. If students were required to make public service announcements or informational flyers to distribute around campus instead of writing a paper on the subject of campaign financing, then the assignment would address civic engagement as well.

One of the most significant strengths of using ePortfolio for learning and outcomes assessment is that it can "create a bridge between the positivistic, strictly quantitative epistemology that underlies some conventional assessment regimes and the more complex and situated understanding of teaching and learning held by many educators and researchers" (Cambridge, 2010, p. 93). We sought to bridge that same gap and

underscore the benefits associated with asking students to attend to the inter-connectedness of their general education curriculum. At the same time, our ePortfolio implementation follows Finley's (2012) advice: "To ensure student achievement on learning outcomes that both faculty and employers value, educators need to ensure that students work on these outcomes, deliberately and frequently, across the curriculum" (p. 21). Through a collective effort by SLCC faculty who teach general education courses to help students understand the importance and meaning of the learning outcomes across the disciplines, students receive multiple opportunities to demonstrate their progress toward and achievement of the learning outcomes.

SLCC student and ePortfolio scholarship recipient, Eli Spikell, adeptly uses his ePortfolio as a platform for showing the interconnected stories of his general education experiences. Mr. Spikell uses the evidence in his assignments and reflections to demonstrate multiple achievements of each learning outcome across the general education curriculum. We ask students to list and link ePortfolio assignments in the Goals and Outcomes page of their ePortfolios. This further facilitates student reflections on their outcomes achievements and makes more concrete where and how they have addressed the learning outcomes. Mr. Spikell's Goals and Outcomes page (see <http://00dirt.weebly.com/goals-and-outcomes.html>) offers audiences hyperlinked lists of the assignments and projects that helped him achieve the outcomes, creating an interactive exploration of his work and providing a potential assessment team one occasion, among many in an ePortfolio, to interface with how he experienced general education through its learning outcomes.

The college established an assessment schedule that focuses on one or two learning outcomes per year, allowing time for deficiencies to be identified, collective steps to be taken by the faculty, and the loop to be closed. The assessment plan also works on two levels. When particular learning outcomes (e.g., quantitative and information literacy) are up for assessment, each academic program uses semi-standard rubrics to assess signature assignments that tap quantitative literacy (QL) and information literacy (IL), and the Assessment Office then conducts a meta-analysis of that data across disciplines. Meanwhile, the ePortfolio Office conducts the kind of high-level assessment of QL and IL that we report on here and that complements the more detailed assessment done in each program. Taken together, our ePortfolio program and the methodology we employed in assessing our QL and IL learning outcomes with student ePortfolios opens up, in a very real way, possibilities for the reconceptualization of teaching and learning QL and IL as communicative gestures situated within a variety of problem-solving contexts.

One of the particular challenges we faced in assessing QL was an internal debate at the college about whether QL could be demonstrated in an ePortfolio only in Math courses, or in other courses as well. The debate reflected a divide in the perceptions about the deployment of QL outside of the Math department. Part of this thinking can be directly linked to traditional assessment methods in which students are tested using multiple-choice questions or a series of calculation problems to “determine whether students have gained basic quantitative skills and understandings. This approach provides test takers with problems that explicitly call upon knowledge of quantitative concepts and tools” (Grawe, Lustky, Neil, & Tassava, 2010, p. 1). Traditional QL assessment (standardized tests) of this sort can demonstrate student achievement of an integral QL skill—the ability to apply QL when prompted and in “selected contextual domains” (1). However, if QL is important in analyzing, evaluating, and articulating data in arguments and other genres of communication, it is necessary to develop assessment methods that match the learning outcomes of the institution.

Although the use of QL varies by discipline, SLCC’s QL college-wide learning outcome transcends disciplinary boundaries. As approved by the General Education Committee, it reads as follows:

Students develop quantitative literacies necessary for their chosen field of study. This includes approaching practical problems by choosing and applying appropriate mathematical techniques; using information represented as data, graphs, tables, and schematics in a variety of disciplines; and applying mathematical theory, concepts, and methods of inquiry appropriate to program-specific problems. (SLCC, 2013b)

While there has been much research on QL assessment, most of this research has not really been conducted for a holistic assessment of student work across the curriculum, let alone with ePortfolios. Our QL assessment methods get us closer to the ideal that Cambridge (2010) encouraged, while still providing us with the quantitative data we need for external audiences.

Similarly, the literature on IL is mostly focused on librarians as the primary audience. We argue, as did Grawe et al. (2010), that student achievement and demonstration of QL can be measured in terms of transmitted knowledge via standardized tests; however, it is imperative for students to have “developed the skills necessary to deploy the capacity effectively in contexts other than those in the test” (p. 1). The same argument could and should be made for IL—it is not enough for students to transmit knowledge by finding

relevant information in online databases and in the library as well as evaluating the validity of their research. While these skills are extremely important to student learning, particularly for critical reading and thinking (Oakleaf & Kaske, 2009), it is imperative that IL extend beyond developing research skills into the realm of conversing and communicating with sources.

Grawe et al. (2010) also argued that QL might be summarized as “the habit of mind to consider the power and limitations of quantitative evidence in the evaluation, construction, and communication of arguments in personal, profession, and public life” (p. 1-2). We extend that argument to our IL assessment methods. When encouraged across the general education curriculum, IL should create a consistent “habit of mind” (De Nicolás, 2000) as students consider the power and limitations of their research and how they will deploy that research in different contexts. Habits of mind create transparency through frequent repetition. The habits become technological connections between the brain and the body that further bridge past, present, and future experiences. When students are asked repeatedly to perform critical analysis and application of information in a variety of contexts, they achieve information literacy. Thus, our assessment of IL encompasses basic indices of student research and use of sources, as well as a more holistic look at students’ ability to employ those sources to achieve a purpose or support an argument.

Both our QL and IL assessment methods required that our assessors examine how often and to what extent students employed quantitative evidence and other information from sources in their own work. Assessors also examined evidence of students’ ability to engineer ways of structuring, representing, designing, and delivering information as both a moderator and translator of that information. SLCC’s ePortfolio implementation and transmission is ideal for identifying and assessing QL and IL across the curriculum.

Methods

Assessment Framework

Our Institutional Research Office pulled a sample of 160 students who graduated in May 2013, and who did not transfer in any external credits for their AA or AS degrees. This ensured that we were looking at students who completed all of their general education coursework at SLCC instead of at other institutions. From that pool of 160 students, we selected the first 50 female and the first 50 male students who had ePortfolios available in our Banner system and whose ePortfolios contained at least one QL assignment. We sought a balance of male and female students because

SLCC's student body is evenly split by gender (SLCC, 2013a). While compiling the list of females, five names were passed over either because they did not have an ePortfolio in our system or because their ePortfolio did not contain at least one QL assignment. Seven names in the list of males were passed over because either they did not have an ePortfolio in our system or because their ePortfolio did not contain at least one QL assignment. This collection of 100 ePortfolios from graduating AA and AS students—out of the 2,706 students who received Associate degrees at that time—became the sample for the assessment study.

We assembled two two-person assessment teams to examine all 100 ePortfolios using QL and IL rubrics. The assessment team that looked at IL was composed of two Biology faculty members. The assessment team that looked at QL was composed of a Math faculty and a Humanities faculty. Prior to the start of their rating sessions, each team went through a norming exercise led by the ePortfolio Coordinator. Each assessment team came to a consensus rating for every ePortfolio on all of the rubric criteria for which they were responsible before moving on to the next ePortfolio. Each individual in the assessment teams received \$41.62 per hour (SLCC's adjunct hourly rate cap) in compensation for their time. The IL team spent approximately fifteen hours assessing ePortfolios, and the QL team spent approximately twenty hours on their portion of the assessment.

The QL rubric that was used by the QL team pulls criteria and language directly from the rubric for quantitative literacy (Rhodes, 2010), although it was modified to allow us to account for the number of assignments assessed. Part one of the IL rubric was also derived from a section of the AAC&U VALUE rubric for information literacy (Rhodes, 2010), while part two was developed in-house to quantify the amount of evidence pertaining to information literacy. The rubrics used in this study have been published for the college community (see Appendix).

Findings

Quantitative Literacy

Most colleges and universities in the United States want their students to demonstrate quantitative literacy. Our assessment team for QL examined the sampled ePortfolios with respect to three indices of quantitative literacy, namely ability to:

- Explain information presented to the student in the form of equations, graphs, diagrams, tables, words, etc. (Interpretation);

- Convert relevant information from one form—such as equations, graphs, diagrams, tables, and words—to another (Manipulation);
- Express quantitative evidence in support of the argument or purpose of the work—in terms of what evidence is used and how it is formatted, presented, and contextualized (Communication).

As Table 1 indicates, mean scores for the Interpretation and Manipulation measures of QL cluster around 2.8 out of a possible 4.0. There was no statistically significant difference between the scores of male and female students. Mean scores for Communication were somewhat lower at 2.5, and the data show greater variability among means for this measure of QL. Female students were better at Communication—expressing quantitative evidence in support of an argument or purpose of the work. Women scored on average 2.70 on the Communication index, while men scored 2.34 on average, a difference that is statistically significant at the .05 level using a Student's *t* test.

Another way to examine the data is to show how all the assignments fit into the different performance categories of the QL Rubric. The results shown in Table 2 indicate that three quarters of the graduates in the sample are meeting or exceeding expectations with respect to interpreting and manipulating data. That's the good news. The less-than-good news is that our confidence in this strong performance must be tempered by the fact that it is based on a rather thin number of assignments per student. On average, each ePortfolio contained 1.97 assignments that addressed QL Interpretation and 2.0 assignments that addressed QL Manipulation. Assignments from Math courses constituted the majority of the sample in both cases.

The other item to note about these results is that the scores for Interpretation and Manipulation tracked each other almost exactly for each student. This stands to reason in one sense, given that students who are good (or poor) at interpreting data would be equally good (or poor) at manipulating it. On the other hand, it could mean that the VALUE rubric (Rhodes, 2010)—as applied to collections of assignments that do not specifically fit within the rubric criteria—cannot distinguish clearly between interpreting and manipulating data. The solution to this dilemma probably lies in more nuanced assignment design and faculty sharing of QL rubrics with their students. Students could be encouraged by faculty to use the rubric as a form of self-assessment.

Table 2 also shows that, with an average of 2.6 assignments in each ePortfolio tapping the Communication criterion, nearly 50% of the assignments met or exceeded expectations. Forty percent of the assignments were below expectations,

Table 1
Mean Scores for Three Measures of QL in Student ePortfolios

QL Measure	<i>M</i>	<i>SD</i>
Interpretation	2.81	.44
Manipulation	2.80	.48
Communication	2.52	.68

Note. *n* = 100 portfolios

Table 2
Percent of QL Assignments Falling into Performance Categories

QL Measure	Performance Measures				Total
	Exceeds	Meets	Below	Well Below	
Interpretation <i>n</i> = 197 assignments	06%	72%	21%	01%	100%
Manipulation <i>n</i> = 200 assignments	05%	70%	24%	01%	100%
Communication <i>n</i> = 262 assignments	14%	35%	40%	11%	100%

and 11% were well below expectations. There were more assignments that tapped the Communication criterion (as opposed to the Interpretation and Manipulation criteria) simply because there were additional non-Math assignments in which students attempted to express quantitative evidence in support of their argument or the purpose of the work.

Information Literacy

Graduates in any field need to be capable researchers and users of information. It is incumbent upon citizens and workers to manage the flood of information that is available to us via a keystroke or a mouse click. An important way for faculty in higher education to help our students, then, is to make assignments in which students need to find information, sift through it to locate credible sources, and appropriately use and cite those sources in their work to achieve a purpose.

Our reviewers examined the sampled ePortfolios for evidence that students “gather information using technology, library resources, and/or other modalities.” They were careful to exclude simple information-gathering, such as reading course texts or other materials that instructors provided, instead noting “instances of outside-of-class resources that indicate the student relied on the library, online databases, or other modalities to do research.”

Table 3 shows that nearly 25% of the ePortfolios had little or no evidence of outside-of-class research—namely, that these ePortfolios contained zero or one artifact for which the student went to outside resources for information to complete the assignment. More encouraging is that 38% had “some” evidence, or two

to three artifacts that required outside research, and 39% of the ePortfolios had four or more artifacts that required the students to do outside research to complete the assignments.

Our assessment team also looked at the extent to which each student’s work used credible sources. As Table 3 indicates, 19% of the ePortfolios had zero signature assignments that cited credible sources. Twenty percent of the ePortfolios had one artifact that used credible sources, which was coded as “little” evidence. A positive result is that 29% of the ePortfolios had “some” evidence, meaning that two to three artifacts used credible sources, and 32% of the ePortfolios had “considerable” evidence—four or more artifacts that cited credible sources.

In addition to using credible sources, a college graduate should also properly cite those sources. Our reviewers were not interested in the type of citation format used by students; however, they did inspect student work for appropriate academic documentation (e.g., APA, MLA, or Chicago) of their sources. Table 3 reveals that 23% of the ePortfolios had no properly cited sources. Twenty-eight percent had one properly cited artifact, or little evidence. Thirty percent had two to three properly cited artifacts, or some evidence, and 19% had four or more assignments with sufficiently documented sources. Since proper citation of credible sources is at the heart of academic work, it appears that the general education program at SLCC is not providing students enough practice in this important skill.

Our 2012 general education assessment captured this same data (although with a sample of 83 ePortfolios rather than 100). The comparative data shows that there has been an improvement in the number of signature assignments that address SLCC’s

Table 3
Percent of ePortfolios Displaying Key Levels of Evidence for IL

IL Measure	Levels of Evidence				Total
	Considerable (4 + artifacts)	Some (2-3 artifacts)	Little (1 artifact)	None (0 artifacts)	
Outside of Class Research	39%	38%	10%	13%	100%
Using Credible Sources	32%	29%	20%	19%	100%
Adequately Citing Sources	19%	30%	28%	23%	100%

Note. $n = 100$ portfolios

criteria for information literacy. Table 4 clearly shows that the ePortfolios of graduating students in 2013 were significantly richer in evidence of students conducting outside of classroom research, using credible sources, and adequately citing those sources than were the ePortfolios of 2012 graduates. This is positive news that may indicate that SLCC faculty require more from students in their signature assignments.

We sought to investigate the extent to which our students can, in the words of the AAC&U's rubric for Information Literacy (Rhodes, 2010), "use information effectively to accomplish a specific purpose." More specifically, we were interested in whether students could do so using resources acquired outside of class, so our evaluators read each assignment, looking for the extent to which the student "communicates, organizes, and synthesizes information from sources to fully achieve a specific purpose, with clarity and depth" (see Appendix). Scores on this rubric range from 1.0 to 4.0. The mean score for all students in the sample—including those ePortfolios that contained no assignments that used out-of-class sources—was 2.35, with no statistically significant difference between female and male students. If we factor out the 13 ePortfolios in the sample with no assignments needing out-of-class resources, the mean rises to 2.74.

In the 87 ePortfolios that had assignments requiring some research outside of class materials, reviewers identified a total of 338 assignments. Table 5 breaks down the percentage of those assignments that fit into each category of the rubric. We can see that for assignments marked "well below" and "below" expectations--constituting 34% of the total--students did not use outside resources adequately to achieve their purpose. On a brighter note, 66% of the assignments demonstrate that students did achieve their purpose when using outside resources.

Potentials of ePortfolios in Closing the Loop

We drafted a report on these findings and distributed it to all faculty and all academic administrators in July (Hubert & Lewis, 2013). The report does not limit itself merely to describing the results of the assessment. It contains specific observations and recommendations that are designed to improve the teaching and learning of QL and IL across the disciplines in general education. Our intention is to leverage the academic hierarchy and its various committees and support systems to induce positive change. We reproduce those observations and recommendations here.

Observations and Recommendations for Quantitative Literacy:

1. No one looking at the sampled ePortfolios could escape noticing that outside of Math courses, SLCC students are almost never formally asked to interpret or manipulate data in the form of equations, graphs, diagrams, tables, etc. This is probably a characteristic of most general education programs at community colleges around the nation, but SLCC faculty need to ask themselves whether, given the prominence and importance of QL in our learning outcomes and for the future success of our students, a concerted effort needs to be made to infuse QL across the curriculum. Surely, we are not serving our students well if faculty view fostering QL as the sole responsibility of the Math department.
2. Faculty in areas including the Social Sciences, Business, Physical and Biological Sciences, and Lifetime Wellness should make conscious efforts to design signature assignments that ask students to perform all three indices of quantitative literacy: interpret, manipulate, and

Table 4
*Percentage of ePortfolios (2012 and 2013) Demonstrating “Some” or “Considerable”
 Evidence of Key Dimensions of Information Literacy*

	2012 Assessment (<i>n</i> = 83 portfolios)	2013 Assessment (<i>n</i> = 100 portfolios)
Outside of Class Research	60%	77%
Use Credible Sources	53%	61%
Adequate Citation	37%	49%

Table 5
*How Well Do SLCC’s Graduates “Use Information Effectively to Accomplish a Specific Purpose?”
 Percentage of Assignments Falling into the Performance Categories*

	Performance Categories				Total
	Exceeds	Meets	Below	Well Below	
Interpretation <i>n</i> = 338 assignments	18%	48%	25%	9%	100%

communicate evidence in the form of data, graphs, diagrams, tables, etc. This might require faculty to ask students to put more than one signature assignment in the ePortfolio—one that speaks to QL in the discipline and one that speaks to other learning outcomes such as effective communication, critical thinking, or civic engagement. The point here is for students working their way through our general education program to have multiple opportunities to reinforce basic quantitative literacy outside of their Math courses. An additional recommendation is for academic schools to map QL signature assignments across their curriculum to ensure that students have such opportunities.

- As Table 2 indicates, we faculty have some work to do in helping students use quantitative data more effectively to support arguments or fulfill their purpose with respect to signature assignments. One suggestion would be to provide students with examples of how quantitative data is used in disciplinary contexts. Another would be to write assignments that explicitly ask students to use quantitative data to accomplish their purpose. Interestingly, what fails to be expressed in Table 2 are the large number of signature assignments the reviewers noticed in which student work should have employed basic data but did not (e.g., papers on AIDS in the United States or obesity as a world health concern, in which students did not even attempt to present quantitative data either to inform the reader or make a point).

- The Faculty Teaching and Learning Center (FTLC) should work with academic programs, the Assessment Office, and the ePortfolio Office to infuse QL signature assignments in appropriate general education courses outside of Math. FTLC mini-grants should be available to compensate faculty who engage in this process.

Observations and Recommendations for Information Literacy:

- As Table 3 indicates, in nearly a quarter of all the sampled ePortfolios, students had zero or one assignment in which they apparently were asked to use resources they obtained outside of class. Given that students take 12 or 13 courses to fulfill their general education requirements, faculty at SLCC need to decide whether these results are satisfactory. Obviously, the signature assignments in some courses necessarily rely only on in-class materials, but we argue that it should not be possible for a student to achieve an AS or AA degree without ever having the experience of locating, using, and citing credible outside-of-class sources to accomplish a specific assignment.
- Similarly, Table 3 also shows that 39% of the sampled ePortfolios had zero or one assignment in which the student used credible sources in their work, and 51% had zero or one assignment in which the sources were cited adequately. This implies that when faculty craft assignments that require outside research, they need to do a better job impressing upon students—verbally or in the

assignment itself—that they are expected to use and properly cite credible sources in their work. Faculty and Associate Deans should work collaboratively in their respective programs to ensure that students receive this message. In addition, faculty might consider having students use the research workshops available through the campus libraries and Student Writing Center.

3. Students often come to college not knowing the difference between credible and non-credible sources and not knowing how to cite their sources properly. We faculty often assume that students learned these things in high school, when in fact they did not. Or it may be the case that enough time has elapsed since they did learn about citation and credible sources that they have forgotten. In any case, departments or individual faculty should develop instructional materials that explain their disciplinary understanding of source credibility and proper citation. Students would then have something concrete to aim for when completing their work. Because many of these instructional materials will be common across various disciplines, the FTLC should coordinate this effort, and going forward, all faculty should employ these instructional materials.
4. Online resources for citation are readily and freely available from a number of places. If they have not already done so, faculty should share these resources with students in their Canvas course sites, syllabi, and/or department webpages. We need to make it easy for students to cite properly the sources they use in their work.

Conclusion

As we noted above, there appears to be a consensus in the literature that in addition to being a potential high impact practice in colleges and universities, ePortfolio pedagogy implemented across the disciplines can put us in the enviable position of being able to authentically assess student learning as it actually happens in general education and within the major. From our experience, and drawing on the experiences of other institutions of higher education that are implementing ePortfolios, there appears to be a straightforward recipe for designing ePortfolio systems to promote simultaneously student engagement and authentic assessment. The recipe requires several years of hard work, a supportive

administrative structure, and a mixture of the following design elements:

- An ePortfolio platform that students and faculty like to use and that promotes student creativity;
- Signature assignments that directly tap multiple essential learning outcomes.
- Requiring students to reflect on their work;
- A means to examine random samples of student ePortfolios;
- A mechanism to report assessment results to faculty and academic administrators;
- An institutional culture that facilitates action on the assessment results.

Our example here illustrates the potential of ePortfolios to assess general education at a comprehensive community college. The eye-opening results communicate an important assumption most faculty make about general education: that because they are familiar with the mix of courses students are likely to take, they can infer what students are learning. However, when an ePortfolio requirement is implemented across all general education courses, it illuminates the general education program in a new light—the light of how students actually do (or do not) progress toward learning outcomes via the assignments they receive across the disciplines. In an ePortfolio, students represent their learning, but they will often simultaneously represent only what they have been required to do in the form of signature assignments and reflections.

A clear revelation here is that despite the debate on our campus about how and where students should learn quantitative literacy, in actuality they are learning it primarily in their Math courses. Another revelation is that students are not getting enough practice in finding outside sources and correctly marshaling those sources to achieve a specific purpose in a discipline-specific context. Students should experience general education, regardless of the model, as a series of disciplines connected by mutual needs and interdependency. Our assessment findings offer evidence to support this argument. When we conduct a high-level assessment of this sort—the kind of assessment that was impossible for us prior to ePortfolio—we see for the first time the strengths and weaknesses of our general education program as a tool for facilitating the quantitative and information literacy habits of mind that students will need to thrive in their continued education or career.

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Appendix
Rubrics Used in the General Education Assessment

Quantitative Literacy Rubric

	Exceeds Expectations	Meets Expectations	Below Expectations	Well Below Expectations
Interpretation <i>Ability to explain information presented to the student in the form of equations, graphs, diagrams, tables, words, etc.</i> <i>Total # Assignments</i> <i>Mean Score</i> _____	Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. <i># of Assignments</i> _____	Provides accurate explanations of information presented in mathematical forms. <i># of Assignments</i> _____	Provides somewhat accurate explanations of information presented in mathematical forms, but occasionally makes minor errors related to computations or units. <i># of Assignments</i> _____	Attempts to explain information presented in mathematical forms, but draws incorrect conclusions about what the information means. <i># of Assignments</i> _____
Manipulation <i>Ability of the student to convert relevant information from one form—such as equations, graphs, diagrams, tables, words—to another.</i> <i>Total # Assignments</i> <i>Mean Score</i> _____	Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding. <i># of Assignments</i> _____	Competently converts relevant information into an appropriate and desired mathematical portrayal. <i># of Assignments</i> _____	Completes conversion of information but resulting mathematical portrayal is only partially appropriate or accurate. <i># of Assignments</i> _____	Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate. <i># of Assignments</i> _____
Communication <i>Ability of the student to express quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)</i> <i>Total # Assignments</i> <i>Mean Score</i> _____	Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality. <i># of Assignments</i> _____	Uses quantitative information in connection with the argument or purpose of the work, though data may be presented in a less than completely effective format or some parts of the explication may be uneven. <i># of Assignments</i> _____	Uses quantitative information, but does not effectively connect it to the argument or purpose of the work. <i># of Assignments</i> _____	Presents an argument for which quantitative evidence is pertinent, but does not provide adequate explicit numerical support. (May use quasi-quantitative words such as “many,” “few,” “increasing,” “small,” and the like in place of actual quantities.) <i># of Assignments</i> _____

Information Literacy Rubric

Part I	Exceeds Expectations	Meets Expectations	Below Expectations	Well Below Expectations
<i>Uses information effectively to accomplish a specific purpose.</i>	Communicates, organizes, and synthesizes information from sources to fully achieve a specific purpose, with clarity and depth.	Communicates, organizes and synthesizes information from sources. Intended purpose is achieved.	Communicates and organizes information from sources. The information is not yet synthesized, so the intended purpose is not fully achieved.	Communicates information from sources. The information is fragmented and/or used inappropriately (misquoted, taken out of context, or incorrectly paraphrased, etc.), so the intended purpose is not achieved.
<i>Total # Assignments</i> _____				
<i>Mean Score</i> _____	# of Assignments _____	# of Assignments _____	# of Assignments _____	# of Assignments _____

Part II	Considerable Evidence	Sufficient Evidence	Little Evidence	No Evidence
<i>A. The student gathers information using technology, library resources and other modalities.</i>	Four or more artifacts indicate the use of sources that required research outside of class.	Two or three artifacts indicate the use of sources that required research outside of class.	One artifact indicates the use of sources that required research outside of class.	No outside-of-class resources appear to have been used by this student.
<i>B. The student uses credible sources in their work.</i>	Four or more artifacts indicate the use of credible sources that required research outside of class.	Two or three artifacts indicate the use of credible sources that required research outside of class.	One artifact indicates the use of credible sources that required research outside of class.	Credible sources appear not to have been used by this student.
<i>C. The student appropriately cites his/her sources.</i>	Four or more artifacts indicate the use of sufficiently documented sources.	Two or three artifacts indicate the use of sufficiently documented sources.	One artifact indicates the use of sufficiently documented sources.	Sources appear not to have been documented by this student.

ePortfolio as a Catalyst for Change in Teaching: An Autoethnographic Examination of Transformation

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In this autoethnographic study, the authors/subjects examined retrospective reflections (narratives) on their experiences within an ePortfolio community of practice to help them understand the conditions that led to transformations in their teaching. The theoretical framework of situated learning and cognitive mediation was used to explore this process of transformation and explain how participation in a community of practice might lead to such change. We argue that ePortfolio itself is imbued with specific meaning, which provides potential users with opportunities to connect with its pedagogical potential. Enticed by this potential, individuals are drawn into a community of practice and their understanding of the tools and practices associated with that community becomes increasingly more complex as they become more deeply integrated into the community. As participants move from being newcomers to full participants in the community, their understanding of the tool is mediated by their engagement and practice with it. This engagement and practice leads to greater competence and has specific effects on the individuals' notions of membership and identity within the community of practice. We argue that this framework provides a unique way of understanding how transformation can occur, specifically for faculty and their teaching.

Trained as an art historian, I never had a single education class and knew little of pedagogical theory. My teaching was largely modeled after the teaching I had experienced as an undergraduate and grad student—lectures for larger, lower-level classes and discussion-based seminars for small, advanced classes. I was relatively good at it. My students, for the most part, learned the material; a number went on to advanced study; a couple even decided to follow in my footsteps and become academics themselves. I always had a sneaking suspicion, though, that I could do better. (Excerpt from Gillian Greenhill Hannum's reflective narrative)

Like Gillian, many of us working in discipline-based academic departments in higher education have had very little—if any—education in education. As Gillian (an author of this paper) suggested, we teach as we were taught, and in all likelihood, we were successful as undergraduate and graduate students in spite of rather than because of the traditional pedagogy we experienced. Consequently, it is difficult for traditional methods of teaching and learning to be seen as potentially ineffective, which, in turn, makes changing the culture of teaching and learning in university contexts very difficult (Lawrence & Sankey, 2008). Making matters worse, higher education often lacks formal and informal structures for sharing learning and teaching practices. Therefore there is little, if any, institutional memory of effective teaching and learning innovations and few mechanisms for improving teaching practices (McDonald & Star, 2008). What, then, does it take to transform the complacency of teaching as we were taught to the restlessness of we can do better? Bass (2012) offered

some hope for this change in his article, “Disrupting Ourselves: The Problem of Learning in Higher Education”; he wrote:

Our understanding of learning has expanded at a rate that has far outpaced our conceptions of teaching. A growing appreciation for the porous boundaries between the classroom and life experience, along with the power of social learning, authentic audiences, and integrative contexts, has created not only promising changes in learning but also disruptive moments in teaching. (p. 23)

These disruptive moments, Bass argues, create opportunities for faculty to (re)examine the role that instructional technologies like ePortfolio might play in aligning our conceptions of teaching with our understanding of learning. In this autoethnographic inquiry, we examine the ways in which our experience with ePortfolio, both as a technological tool and a set of pedagogical practices, generated disruptive moments for us and led to transformations in our teaching.

Each of the authors of this article serves in a leadership role in our campus-wide ePortfolio initiative, and we are active participants in the Connect to Learning (C2L) grant, which aims to link 25 institutions across the U.S., building a community of practice contributing to a national resource site for ePortfolio initiatives (Eynon, Gambino, & Torok, 2013). From the moment we became involved in the Making Connections seminar, funded by the Fund for the Improvement of Post-Secondary Education (FIPSE) and subsequently the C2L grant, we were exposed to new ideas and ways of thinking about student learning,

specifically in ways supported by the use of ePortfolio. Disrupted by these new ideas, each of us has also been fundamentally changed by our participation in the community of ePortfolio practitioners. We experienced increased use of peer review, increased opportunities for reflection, opportunities to integrate knowledge from experiences gained outside of the classroom and service learning projects, increased application of knowledge, changes in course assessment, a greater sense of community, more opportunities for collaboration, increased use of multimedia, to name a few. Bass' (2012) description of "disruptive moments in teaching" resonates strongly with us and has inspired us to gain a greater understanding of the process by which our own change has occurred. The purpose of our research is to closely examine and articulate the ways in which our pedagogical practices were transformed through our participation in a community of ePortfolio practitioners as well the ways in which ePortfolio itself came to be a catalyst for change in our teaching. Through a better understanding of the conditions that led to substantive changes in our teaching practices, we hope to be able to create opportunities in which others experience similar transformations.

We began our investigation with an exploration of the role of community in faculty development. In the late seventies, Cox (1999, 2004) began experimenting with and examining the effects of creating multidisciplinary faculty learning communities (FLCs), in which faculty from different stages in their careers or who share an interest in a particular topic or issue spend a year together as professional development colleagues. In the three-plus decades that followed, Cox has been assessing the impacts of and continuously improving upon his community-based professional development model. In an article introducing FLCs to a new wave of faculty developers, Cox (2004) used a powerful quote from Parker Palmer to open and underscore his argument for the need for faculty learning communities:

The growth of any craft depends on shared practice and honest dialogue among the people who do it. We grow by trial and error, to be sure—but our willingness to try, and fail, as individuals, is severely limited when we are not supported by a community that encourages such risks. (as cited in Cox, 2004, p. 5)

In a recent article, Cox (2013) made illuminating connections between his work with FLCs and Wenger's (1998, 2000, 2006) theories about the effects of communities of practice (CoP) on learning. Cox (2013) suggested that FLCs are a special type of CoP, and he draws on literature from Wenger and professional development scholars using and assessing the value of

CoPs to substantiate his claim that FLCs are powerful practices for promoting, facilitating, and supporting faculty growth and development (Lawrence & Sankey, 2008; McDonald & Star, 2008). While we found Cox's (2013) use of the CoP literature in higher education to be effective in making a case for the benefits of FLCs, we also found ourselves wanting to know more about how communities of practices actually work to effect the growth and change that Cox (2013) and others have documented and that we ourselves experienced. This led us to a deeper investigation of the CoP literature and the development of a conceptual framework that would help us explore this how question.

Conceptual Framework

Wenger (2006) defined a CoP as a group of people "who engage in a process of collective learning in a shared domain of human endeavor" (p. 1). This shared interest supports the building of relationships and creates opportunities for individuals to learn from one another and engage in the community practice. Wenger suggests that a CoP engages in a variety of activities, including problem solving, sharing information and experience, idea development, and mapping knowledge and identifying gaps, among others. A CoP includes the tools, technology, ideas, values, and language specific to the practice. While CoPs are typically self-organizing, Wenger and Snyder (2000) maintain that often they need structure and support to be successful.

From this basic description, it is easy to see that ePortfolio researchers and practitioners are themselves a CoP. For us, the Making Connections and Connect to Learning groups have been our community of practice. We engage formally and informally to share knowledge, problem-solve, and document learning and knowledge. Additionally, we have a shared repertoire of communal resources, such as concepts, ideas, tools, and vocabulary (Wenger, 1998). The goal of these groups is to support one another's implementation and development of ePortfolio pedagogy on our respective campuses, share knowledge, and problem-solve around issues that arise locally. Through our engagement with one another, we developed relationships with each other, we grew in our own ePortfolio practice, our ideas around ePortfolio became more complex and sophisticated, and we developed a shared language around the use of ePortfolio. Fundamentally, we were learning, growing, and changing together.

Wenger (2010) suggested that CoP is best thought of as a social learning theory, emphasizing the process of learning as occurring between people. A social learning theory, or a theory of social practice, emphasizes connectedness and interdependency between learners and environment, agents and tools, tools and cognition, and knowing and identity; learning

is situated within a particular context. Knowledge and meaning are understood as inherently negotiated, constructed, and constituted, occurring in relation to others. In addition to the immediate conditions of learning and meaning-making, learning and practice occur in a context that is historically situated; our current contexts are the result of past meaning-making and construction. People, environments, ideas, and objects exist in contexts with meaning already imbued, ready for future engagement with new people and tools, which themselves have been socially constituted. Thus, Lave and Wenger (1991) suggested that learning should be viewed as the “historical production, transformation, and change of persons” (p. 51).

But how does this transformation occur? Lave and Wenger (1991) focused on the transformations that occur as a function of changing relations between newcomers and oldtimers in the context of learning and engaging in a shared practice in a CoP, a process they referred to as “legitimate peripheral participation” (p. 29). Legitimate peripheral participation helps to explain both the development of knowledge, skills, and identity specific to the community and the process of becoming a member of that community, on the one hand, and the reproduction and transformation of communities of practice, on the other (Lave & Wenger, 1991). “Legitimate participation” refers to the access given to the newcomer to the CoP, and the ways in which such access validates the newcomer and starts him or her along the path of belonging to the CoP. Legitimate participation in the ePortfolio CoP was given to us through our application and acceptance into the Making Connections and Connect to Learning grants. The term “peripheral” was used to emphasize the movement from outsider to insider within the CoP, as one moves toward more intense participation. Peripherality, as envisioned by Lave and Wenger (1991), invokes the potential for connectedness and growth through increasing access, experience, and engagement with the CoP. Newcomers have multiple opportunities for engagement through centripetal participation in the learning curriculum of the CoP, which provides the opportunity for transformation in the skills, knowledge, and identity of the newcomer as newcomers move toward becoming full participants. Centripetal participation refers to the increasingly frequent, complex, and changing opportunities for engagement with the practice.

Put together, the legitimate peripheral participation process results in the development of competence in the CoP’s practices, which is directly related to feelings of identity and membership in a CoP. It is the sense of value in participating and being valued within the community that creates the motivation to become a part of the community, as well as motivation for mastery of the practice. The learning, and subsequent knowing and belonging, involve transformation and change;

legitimate peripheral participation describes the process of becoming. Becoming is evidenced by changes in practice, change in competence of practice, change in identity, change in behavior, change in ideas, and change in the meaning-making process.

While Lave and Wenger (1991) provided a theoretical framework around the process by which newcomers become full participants in a CoP, the transformation in thinking and understanding requires deeper investigation. We turned to Vygotsky’s (1981) concept of cognitive mediation to understand the ways in which engagement, use, and application of a tool serve to change or mediate the tool, as well as the mental functioning of the user of the tool. Here, the concept of tool is “simultaneously ideal (conceptual) and material” (Cole, 1996, p. 117); tools are both psychological and physical. Vygotsky (1981) wrote, “By being included in the process of behavior, the psychological tool alters the entire flow and structure of mental functions” (p. 137). Vygotsky makes the claim that the use of tools fundamentally changes both the way in which the tool is used and how we think about the tool (Werscht, 1991); both the object and the person are changed (Cole, 1996). This is due to the fact that a person brings with him or her a set of preconceived notions about the tool, and the tool itself carries certain cultural affordances or meanings. The interaction of the meanings afforded by the tool with the user’s existing understanding of the tool and use of the tool lead to cognitive meditational change in each of these. Through the use of artifacts/tools, which carry cultural meaning, subject and object are changed, as is the artifact itself.

Within our CoP of ePortfolio, the primary practice in which we engage is the ePortfolio process, and the primary tool we use is the ePortfolio; thus, ePortfolio is both psychological and physical. As users of ePortfolio, we have existing ideas of what ePortfolio is, and the concept of ePortfolio also has meaning already attached to it. An ePortfolio can be used for learning, assessment, and/or career purposes; ePortfolios are used for reflection on and integration of material. ePortfolio may be thought of as an opportunity for self-presentation for students and faculty alike. ePortfolio may elicit associations with social pedagogies, emphasizing community and social learning. As a digital medium, ePortfolio can serve to connect students abroad with their advisors, students with their families, the college with alumni, the college with potential students, students with other students, students with potential employers, etc. Each of these meanings or ways of thinking about ePortfolio is embedded in the concept of ePortfolio and provides a connection point for a potential user; the connection point will vary depending on the needs, concerns, and circumstances of the individual.

The process of mediation is key to understanding how the use of ePortfolio can be understood as a catalyst for change. ePortfolio is understood differently by oldtimers and newcomers, and changes in use and understanding are evidence of both the process of cognitive mediation and the process of becoming a full participant in the ePortfolio CoP. Each of us began our ePortfolio journey as a novice, with little knowledge or understanding about the technology or pedagogy of ePortfolio. Through participation in an ePortfolio CoP, each of us has developed new language, new practices, new identities, and have ourselves moved from novices to full participants in the ePortfolio CoP. We are the products of situated learning within a CoP. But more has happened too. Along the way, our behavior beyond the community of practice has also changed. A repertoire of shared resources (Wenger, 2006) gained through participation in our ePortfolio CoP is now being applied in our classrooms, fundamentally changing how we teach and engage with our students. Below, using Lave and Wenger's (1991) framework of situated learning and the process of legitimate peripheral participation, as well as Vygotsky's (1981) notion of cognitive mediation, we examine the process by which our participation in an ePortfolio community of practice led to changes in our understanding of ePortfolio, which catalyzed changes in our teaching.

Method

Autoethnographic methods were used to analyze closely our experiences of becoming members of an ePortfolio community of practice. Ellis, Adams, and Bochner (2011) described autoethnography as "an approach to research and writing that seeks to describe and systematically analyze personal experience in order to understand cultural experience" (p. 1). Researchers, they explained, use the

tenets of autobiography and ethnography to do and write autoethnography . . . [and] retrospectively and selectively write about epiphanies that stem from, or are made possible by, being part of a culture and/or by possessing a particular cultural identity." (Ellis et al., 2011, p. 1-2)

This methodology also makes sense given the topic of our research. ePortfolio emphasizes the importance of reflection as a basis for continued learning (Rodgers, 2002). Rodgers (2002) stated: "Reflection is the meaning-making process that moves a learner from one experience into the next with deeper understandings of its relationships with and connections to other experiences and ideas. It is the thread that makes continuity of learning possible" (p. 845). Over the course of the two years we have been involved in on-

going research about the use of ePortfolio, reflection has been not only a pedagogy, but also a practice. As part of the C2L grant, we engaged in reflection as a group. This practice led to our initial ideas and thoughts about the impact of ePortfolio on our teaching practices, and the desire to investigate further. These initial reflections served as a practice space, helping us to think about what kinds of prompts would elicit deeper and more specific reflections about the effect of ePortfolio on our teaching. Specific prompts were designed by two of the authors of this paper, Alison Carson and Sherie McClam, to elicit reflection on the ways in which our engagement in an ePortfolio community of practice and use of ePortfolio has ultimately led to changes in our teaching (see Table 1). The prompts were developed prior to the development of the framework for understanding the process of change. In other words, the prompts reflect what we wanted to learn about, and not ideas that we hoped to impose. The prompts were then given to the four of us, and following the completion of the narratives, Sherie and Alison engaged in a qualitative analysis of the narratives. This process involved reading and re-reading the narratives engaging in open coding of the narratives (Strauss & Corbin, 1998). We began with the development of inductive codes as is emphasized by a grounded theory approach (Strauss & Corbin, 1998). Inductive codes were developed as themes began to emerge from the narratives. For example, from reading the narratives, it became clear that each of us had some existing discomfort around either our student learning or our own teaching. This idea of discomfort or disequilibrium was an inductive code emerging directly from the narratives. As new themes emerged, the participants were prompted to elaborate on certain areas of their narratives, and the essays were reviewed again.

As we read through the narratives, the use of our framework described above became clear, and thus we also developed deductive codes from the framework to determine if there was a fit between the framework and our experiences. The narratives were coded again, adding in new deductive codes such as cognitive mediation and move to periphery. This iterative process allowed for a deeper understanding of the narratives. Below, using our codes to organize the discussion, we examine the fit between the framework described above and our experiences.

Results

Discomfort in our Teaching

A catalyst is something that initiates or accelerates a reaction or change. The effects of the catalyst, however, may vary, depending on the circumstances under which the catalyst and reactant interacts. Our narratives provide

Table 1
Prompts for Autoethnographic Narratives

Prompts
1. What was it about ePortfolio that “hooked” you? What about ePortfolio engaged you? Why did it “speak” to you?
2. Where were you in your own teaching that created the opening for either the use of ePortfolio or change in pedagogy? What was the context that established an opportunity for change?
3. How has your teaching changed as a result of your either use of ePortfolio or implementation of new pedagogies?

some indications to the circumstances and contexts in which we found ourselves when we were exposed to ePortfolio for the first time. Each of us was experiencing a sense of disequilibrium or discomfort around our current state of teaching. Alison wrote:

In my own teaching, I have had three courses as my primary focus for a number of years now. Each time I teach them, I think to myself that I need to update the content, revise the assignments, change particular lectures and assignments that aren't working, but time always seemed to slip past me. Assignments didn't really work, I hated the grading, and I often had an uncomfortable feeling that what I was looking for was simply a regurgitation of what I had told them.

Gillian also experienced this sense of discomfort, as is evidenced in the quotation used to open this paper. She stated:

I always had a sneaking suspicion, though, that I could do better. I felt like I was talking “at” my students too much; I wanted them to engage with the material on a deeper level, to make it their own rather than to simply regurgitate back the information I'd presented to them.

Both Gillian and Alison wrote similarly about a nagging sense of discomfort around their teaching and their students' learning, wishing to do better, but not really knowing what was needed to do so.

Sources of Attraction

In addition to an existing sense of discomfort around our teaching, there were sources of attraction for each of us that drew us toward the use of ePortfolio. These sources of attraction varied and were dependent on our contexts and circumstances at the time. For example, as the Chairperson of the Board on Academic Standards, Alison had recently collected data from a faculty survey expressing interest in moving from paper to an electronic Portfolio platform. Alison stated:

I was motivated to elevate the stature of the Portfolio System among students and faculty alike, as well as better integrate the system with students' educational experiences . . . with the hopes of increased engagement from our students. The move to ePortfolio as a platform for our Portfolio System was part of this effort.

Gillian shared Alison's feelings: “The Portfolio had become a chore for our students, a hoop to be jumped through; I thought the digital format would likely engage them and allow them more creativity in their self-presentation.” Sherie said, “The hook for me was the multimedia functionality of ePortfolio.” Sherie also noted, “I heard someone say that ePortfolio could be like an academic Facebook. This truly set my cognitive wheels in motion.” For Jim, ePortfolio was a natural extension of his professional focus on digital media:

As a visual presenter, learner, and teacher working in the arts, ePortfolio appeared to be a concrete reflection of what my learning goals were for students as well as an extension of the content I was already teaching in my classes . . . I was able to visualize ePortfolio as an extension of the traditional studio art critique, a learning environment where work is viewed, analyzed, reflected upon, and then edited based on the feedback and the decisions that the artist/student absorbs.

The sources of attraction were not limited to the meanings imbued in the ePortfolio tool; they also included the attraction to the community of practice itself. Jim stated:

What really hooked me was the ability to work with colleagues outside of my “silo,” and to work and learn from colleagues in other colleges and universities . . . I viewed ePortfolio as a collaborative project with colleagues that I respected and would learn from and an opportunity to participate in something larger than “my” teaching.

Jim saw ePortfolio as providing an opportunity for community and collaboration. These statements show that what attracted us to ePortfolio was different for each of us. The various meanings already imbued in ePortfolio provided multiple avenues of engagement, or multiple opportunities to be a source of attraction to ePortfolio, whether it be increased student engagement, increased creativity, or increased community.

The sources of attraction to ePortfolio may be related to the disequilibrium we were feeling in our teaching. This sense of discomfort may have been necessary to establish an opportunity for disruption and allow us to see these sources of attraction, although this interpretation may be too linear. Whether this disquiet in our teaching preceded our exposure to ePortfolio or was prompted by it is hard to determine. That is, in terms of the framework we are developing, our ongoing discomfort may have been what allowed us to see the sources of attraction and potential in ePortfolio, bringing us to the periphery of the CoP, or perhaps being on the periphery of the CoP is what illuminated our discomfort; it is likely an interaction of these processes that occurred.

Legitimate Access and Legitimate Peripheral Participation

The sources of attraction described above, as well as openings possibly created by discomfort in our teaching, each describe pathways that attracted or pulled us toward the use of ePortfolio, but Lave and Wenger (1991) emphasize that while these may be thought of as pre-existing conditions, for true transformation to occur, one must be a legitimate peripheral participant in a CoP, and this requires legitimate access. Legitimate access, for us, came through participation in the Making Connections grant, which provided us with access to an existing ePortfolio CoP and all that membership entails, including engagement with oldtimers, near-peers and peers, as well as access to information, knowledge and opportunities for participation. Access also allowed for opportunities to connect with the history and culture of the practice, both of which support the development of identity around the practice. Participation in Making Connections also granted us legitimacy within the CoP; as welcomed newcomers with formally granted access, we were invited to participate through a curriculum, providing opportunities for engagement and practice and, ultimately, competence. Gillian described what she gained from legitimate access to the ePortfolio CoP:

Collaboration and support were crucial to my engagement and successes with ePortfolio. The

Making Connections and Connect to Learning communities gave me entrée into a community of practice with people both more and less experienced than I was. People shared successes and failures, helped us to think through our practices on a deeper level and to consider improved means to lead us to a desired end. We were able to model some of our practices on successful and “road tested” strategies used by others, allowing us to tweak and customize rather than having to reinvent the wheel. The camaraderie and support kept us going when we faced significant challenges. All of this had inestimable value to our institutional progress with ePortfolio.

While participation in the Making Connections grant provided external legitimacy and access, some of us noted instances of feelings of internal legitimacy, feelings of validation because we had been accepted as fledgling members of the ePortfolio CoP. Sherie described this feeling shortly before she officially joined the Manhattanville ePortfolio Team:

One day while I was figuring out how to creatively populate [my course template] ePortfolios with images, videos and prompts, I got an email from Jim who, as an [Digication] administrator, noticed what I was doing and wrote to compliment and encourage me. He even asked if he could borrow one of my prompts for student reflection. I suspect this was a critical moment in my sense of becoming part of the community of ePortfolio practitioners on the Manhattanville campus. Fueled by the gratification that came with seeing myself in this way, I truly jumped in with both feet.

Here, Sherie identified an important turning point in her own sense of legitimacy in the ePortfolio CoP on our campus, as well as a sense of becoming. Her competence in ePortfolio practice was validated by an “oldtimer” in the group and provided a basis for legitimizing her own sense of membership in the group.

Membership in the ePortfolio CoP provided us with opportunities for “increasingly centripetal participation” (Lave, 1991, p. 68). Through increased centripetal participation, the newcomer develops increased knowledge, skills, and understanding of the tools and practices central to the community, allowing one to better see and understand the possibilities for the use of ePortfolio; a more complex and sophisticated understanding of the tool, practice, and CoP culture emerges. Each of our narratives provides evidence of this increasing participation.

Gillian described her increasing participation in the ePortfolio community of practice in the following way:

I had an opportunity to learn more about learning from my colleagues in Psychology and Education. I came to understand the different elements involved in reflection by reading the writings of John Dewey and Carol Rodgers . . . I attended conferences organized by the Association of American Colleges and Universities (AAC&U) and AAEEBL. I heard faculty members from other schools talk about how they were using ePortfolios and other pedagogies effectively in the classroom. I noted ideas I wanted to try out.

Cognitive Mediation

Increased participation in our CoP led to deeper engagement with the practice of ePortfolio, resulting in changes in our own understanding of the concepts, such as reflection, and even ePortfolio itself. Vygotsky suggested that when individuals first begin to use and manipulate a tool, they do it without a full understanding of the meaning or the functional role (Wertsch, 2007). It is only through manipulation of and engagement with the tool that one comes to construct the meaning of the tool and its use in a particular context. Through “increasingly centripetal participation” (Lave, 1991, p. 68), we begin to use ePortfolio prior to a complete understanding of what it meant and what it could accomplish, but in the process of using it, our understanding of the tool changes as we become more fully-fledged members of a community of practice. Our narratives show evidence of the ways in which we learned about ePortfolio through the use of ePortfolio. Alison wrote:

I created a template where students had to upload each lab and respond to prompts, which changed for each lab, asking them to reflect on the process of their writing and examining how they are changing and hopefully improving. But for the first two semesters, due to time constraints in the lab course, I found it very difficult to support students as they were doing this, and it was pretty much a flop. When students realized I was not providing feedback, they stopped updating their [ePortfolios].

Despite the lack of success in this first implementation, it was through use of ePortfolio that Alison came to better understand the role of feedback. Alison provides support for Vygotsky’s notion that to know and understand the tool, one must use and gain experience with the tool. Alison came to have a better understanding of ePortfolio and ways to use it through practice with ePortfolio. While her experience provides a glimpse of this specific relationship between use and

increased or changed understanding, another way to examine cognitive mediation is to look at the resulting changes in behaviors and practices in our classrooms. Gillian wrote:

I again had the Castle Scholars [honors students] work with ePortfolios, but this time, with an added twist. In addition to creating their own individual Honors ePortfolios, I had the students in the capstone Senior Retreat all contribute to a single “class ePortfolio” built around the theme of the United Nations Millennium Development Goals. All the students and collaborating faculty “published” their research on a single ePortfolio, creating a single resource. This was a great success and really moved me into a role a long way away from lecturing . . . Yes, I do still lecture at times, but I can also say that my teaching repertoire has expanded to include all sorts of collaborative endeavors.

Here, we see Gillian changing her classroom practices as a result of previous learning and increased competence with ePortfolio. Alison wrote:

In essence, while I have been changing my own ideas about teaching and learning, I find myself also communicating these ideas to my students. With an increased focus on the process over product (not only with regard to the actual assignments, but also with the learning itself), I find myself talking to students more about the process, asking them to think about their learning and the ways in which they have changed across the course of the class.

Jim noted:

Through both the use of ePortfolio and immersion in many readings and discussions about pedagogies dedicated to reflection and integration, I have changed the way that I approach my teaching. First and foremost, I have slowed down the learning process, allowing students more time to reflect on what they have created, the skills they have learned and how these skills might be applied to their life outside of the class they are currently in. I provide students with reflection prompts for each assignment aimed at having them think beyond the technical skills they have learned and to consider what they have learned and how a skill might be integrated in other courses or areas of their lives.

Each of these quotations shows how we have changed assignments, requirements, and practices in our classrooms. These changes in behavior, one can

reasonably argue, are the consequences of changes in understanding of student learning, social pedagogies, and the processes of reflection and integration that came as a result of being members of an ePortfolio CoP and learning from our use of ePortfolio as a pedagogical tool within that CoP. Through engagement in ePortfolio practice, we have been transformed in how we think about teaching, the ways we engage with our students, and how we think about ePortfolio. Additionally, we have changed how we think about ourselves.

Communities of Practice and Identity

Lave and Wenger (1991) argued that in addition to the acquisition and development of competence in knowledge, skills, and practices within a CoP, increased centripetal participation also leads to the development of one's identity as a member of the CoP. We have certainly experienced this ourselves; our increased participation and experience with ePortfolio has led to increased competence with regard to our own ePortfolio practices, and an increased sense of belonging in the ePortfolio CoP, which in turn leads to an increased desire for mastery of the practice. Wenger (2000) argued that learning within a CoP can best be thought of as a realignment or reorganization of the CoP's definitions of competence and the participant's experience. In the beginning, a newcomer will be defining learning within the CoP according to the CoP's criteria for competence (Wenger called this the regime of competence). However, as the newcomer engages with the CoP and gains more experience and practice with the CoP's tools, the more experienced participant can now participate in establishing and maintaining the regime of competence. At this point, the knower and knowledge cannot be separated, and learning is becoming (Wenger, 2000). Alison demonstrated this complex interplay between experience, competence, and belonging by writing about how her membership on the ePortfolio Leadership Team influenced her sense of obligation to engage in the practice of ePortfolio:

Being part of [a larger ePortfolio community] fundamentally changed my understanding of ePortfolios, portfolios, and the needed culture change on our campus in order to have a successful ePortfolio implementation . . . I began to naturally think about my own classes, although I am not sure how conscious this was . . . Somewhere along the line, I "implemented" ePortfolio into a Psychology lab class that I teach, probably because I thought I should, given that I was a member of the [ePortfolio] team.

First, we see the application of the regime of competence to her own work, her need to apply her

increasing knowledge to her own classes. Additionally, her sense of belonging mandates the use of the tools of her CoP, and her engagement with the tools leads to changes in her identity as a teacher:

I began to use the class as a way to support discussion of on-campus issues, allowing students the time and opportunity to examine the campus community and think about their individual roles in it (and mine). I felt really positive about this new direction I was taking in my class. I was spending less time informing them and more time forming them. We talked about what it meant to have community and empowering individuals within the community.

Again, we see that membership and a sense of belonging provide motivation to uphold certain ideals. Jim wrote:

By being a member of the Connect to Learning group I have made a commitment—to myself, my team, my administration, and to the Connect to Learning family. I have signed a paper taking OWNERSHIP of this project. The ownership part is major—I feel a responsibility to lead by doing—talking the talk and walking the walk. I use ePortfolio in every class.

Here, Jim provided an almost textbook description of how participation in a CoP leads to what Wenger (1998) called "ownership of meaning" (p. 200). He suggested that ownership refers to our sense of responsibility to the tools and their meaning, practices, culture and regime of competence of the CoP, and that our sense of responsibility comes from our sense of belonging and identity as a member of the group (Wenger, 1998).

Final Thoughts

The application of Lave and Wenger's (1991) communities of practice framework and situated learning has helped us to understand the transformation that each of us experienced through our participation in the Making Connections and Connect to Learning communities of practice. Engagement in ePortfolio practice has led to changes not only in our teaching, but also in our identity and the development of feelings of ownership and of responsibility to the goals of our CoP. As we have reflected and continue to reflect on this transformation, we find ourselves looking for ways to replicate our experience for colleagues in our own Manhattanville teaching and learning community. While Lave and Wenger's (1991) framework has

helped us to understand our transformation better, we now need to move from explanation to action. How do we establish a community of practice on our campus that will support the kind of transformation that each of us experienced in others? This prospect leads to additional questions. For example, what are the circumstances that must exist for disruption to occur? What are the factors that push someone toward a CoP opportunity and/or pull someone into the CoP? In terms of the framework we have used in this examination, what circumstances and contexts need to be in place to bring someone to the edge of the CoP? In our own analysis, each of us was able to reflect on feelings of discomfort in our teaching, but we were unable to ascertain whether these feelings of discomfort established an opportunity for disruption or whether the feelings of discomfort were themselves the product of disruption we were experiencing as legitimate peripheral participants in the CoP.

As we think about how to replicate the communities of practice that were so formative for us, what are the essential features of a CoP needed to establish and develop CoPs on our own campuses? Not all CoPs are alike, and some are more successful than others. While this paper examines the changes we experienced as a function of participating in a CoP, it stands to reason that an examination of what made the CoP so successful is important. Wenger and Snyder (2000) explained that CoPs cannot be mandated. Instead, institutional or organizational change agents need to “bring the right people together [and] provide an infrastructure in which communities can thrive” (Wenger & Snyder, 2000, p. 140). Cox (2013) explained that assembling the right people has to do with creating year-long, institutionally-based faculty learning communities built around cohorts who share a particular stage in their career trajectory, such as early career or pre-tenured faculty, or around individuals who share an interest in a particular topic or issue, such as the scholarship of teaching and learning. While we see the potential of this framework for capitalizing on what we have learned about the transformational capacity of communities of practice, we continue to have questions, based on our ongoing, cross institutional CoP experience, about the effect that the nature of the participants in a CoP has on the culture of the CoP itself.

The conditions needed, both within the CoP and external to it, to push individuals toward the CoP are certainly important, but the members of the CoP, both newcomers and oldtimers alike, create the norms, values, language, goals, regime of competency, curriculum of learning, etc. The people in the CoP and the interactions occurring among them will have everything to do with the success and perpetuation of the community of practice.

Charismatic leaders and open-minded, thoughtful newcomers are, perhaps, the right people, but further examination is necessary.

While questions remain, our examination of our own transformations provides evidence of the power of a community of practice. Lave and Wenger (1991) suggested that an essential constant to support such transformation is the engagement in practice, which they suggested is a “condition for effectiveness of learning” (p. 93). With a focus on the engagement in practice, Lave and Wenger (1991) called into question highly instructivist approaches to teaching in which learners focus on notions of mastery rather than understanding learning as a social process occurring within a community of practice. They suggested that an emphasis on practice supports a shift in focus away from the concept of mastery, as located within the master, toward an understanding that mastery is developed through participation in a community of practice of which the master is part (Lave & Wenger, 1991, p. 94). Our examination of our own experiences certainly supports this interpretation. Through participation in the ePortfolio CoP, our understanding of ePortfolio has been transformed, and we suggest that the meanings afforded by ePortfolio push change in a particular direction, disrupting users toward more integrative, constructivist, and social teaching and learning and supporting movement toward a learning paradigm (Barr & Tagg, 1995). Additionally, these multiple meanings and sources of connection help to explain why ePortfolio can be thought of as a catalyst not only for change in terms of teaching, as we argue in this paper, but also for institutional change as well. If we can instill a sense of belonging and ownership alongside the engagement in practice, we may hold the keys to a powerful tool for change—a tool, we would argue, for disrupting ourselves, for generating a sense of responsibility to do better and for transforming a culture of teaching into a culture of learning.

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ePortfolios Reveal an Emerging Community of Underrepresented Minority Scholars

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We used ePortfolios to promote and assess identity change in a summer research program for 81 underrepresented minority community college students. We hypothesized that ePortfolios would increase students' development of academic identity, future orientation, and scholarly community. Students completed weekly ePortfolio journal entries and completed the Twenty Statements Test (in which students complete the statement "I am . . ." 20 times) during the first and final weeks of the program. We found that: (a) both ePortfolio entries and Twenty Statements Tests included increasing references to future orientation; (b) only ePortfolio entries included increasing references to academic identity and scholarly community; (c) changes reflected in ePortfolios were independent of changes evidenced in the Twenty Statements Tests; and (d) individual responses to both ePortfolios and the Twenty Statements Tests showed stability over time. We hypothesized that the inclusion of ePortfolios enhanced students' experience in our program. Similar types of identity shift are likely to be present in many high impact activities (e.g., internships, study abroad, learning communities). The use of ePortfolios in these contexts could have similar value.

As a transfer, yes I have attended college before. The issue is that it was a community college . . . While Freshmen have activities and events to attend to acquaint them with living within what is basically a community, there wasn't much to guide me. (Response to Transfer Student Survey, 2012)

We are the oddball add-ins who have to adjust quickly to things we don't exactly know or understand. (Response to Transfer Student Survey, 2012)

As is reflected in the quotes above, transferring can be stressful. Many transfer students struggle to form new friendships and navigate their new campuses. They may experience a temporary dip in grade-point average (GPA; Thurmond, 2007) and struggle to become engaged (Terris, 2009). Underrepresented minority (URM) students who transfer to schools that have a limited minority presence often struggle to acclimate (Lee, 2001). URM women transferring from community colleges to four-year institutions in the fields of science, technology, engineering, and math (STEM) appear to have an especially difficult period of adaptation (Reyes, 2011). The presence of a critical mass of URM students and faculty has been associated with higher levels of student success (Hagedorn, Chi, Cepeda, & McLain, 2007). Schools that lack critical mass must find other ways to support URM students. We explore the use of ePortfolios during an intensive summer program as a means of supporting URM students.

Participation in research is a high-impact activity that increases student learning as well as engagement with the sciences (Lopatto, 2010; Russell, Hancock, & McCullough, 2007). High impact experiences appear to

be especially helpful in improving academic persistence among URM and first generation students (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). Participation in research improves the persistence of URM women who begin their studies at community colleges (Jackson, Starobin, & Laanan, 2013) and has been associated with higher levels of perceived support and academic persistence among students from underrepresented groups (Barlow & Villarejo, 2004; Maton & Hrabowski, 2004; Yelamarthi & Mawasha, 2008). Research experiences that are incorporated into academic courses can produce similar benefits (Lopatto, 2010; Nadelson, Walters, & Waterman, 2010). Research experiences help students to develop an academic identity, which increases URM student persistence in STEM disciplines (Jackson et al., 2013). We hypothesize that the creation of an enduring record, such as an ePortfolio, will stimulate the development of academic identity both during the summer experience and after it has been completed. Further, as students share their ePortfolios with others, social support for their emerging identities will follow.

ePortfolios are useful as a means of documenting learning from non-traditional activities, such as an intensive research experience (Wang, 2009) and are hypothesized to support reflection, engagement, and active learning (Yancey, 2009). There is evidence that ePortfolios help both students and faculty evaluate growth and reflect on students' academic achievements (Buzzetto-More, 2010). Skiba (2005) suggested that ePortfolios are useful as a means of encouraging students to assess their own strengths and weaknesses as they construct meaning from their academic experiences. Buzzetto-More (2010) found that 88% of students who had created an ePortfolio believed it encouraged them to think about what they had learned.

ePortfolios also appear to be well-suited to helping students develop future goals (Barrett, 2004). If used during a high impact experience that includes a majority of URM students, we hypothesize that ePortfolios will help students to establish a sense of belonging to an URM community of scholars.

The Baccalaureate and Beyond Program

Since 2000, Purchase College of the State University of New York has offered the Baccalaureate and Beyond (B&B) program to support URM students as they transition from community colleges to four-year institutions. Initially established to improve the success of URM students in STEM disciplines, the B&B summer program expanded in 2007 to include students from all liberal arts disciplines. Each year, the program serves approximately 40 students from six community colleges. The students participate in a five-week residential summer program. To qualify, students must be from an URM group, have demonstrated financial need, or have parents who did not attend college. Additionally, students must be 18 or older, have completed at least one semester as a full-time student at a partnering community college, and have a minimum GPA of 2.8. Students are selected for the program after a review of their applications, which include transcripts, a personal essay, and a letter of recommendation. Participating STEM students work in small lab groups to conduct original research in biology, chemistry, cognitive psychology, computer science, environmental science, or neuropsychology. Humanities and social science students complete an upper-level interdisciplinary course on identity that is co-taught by a psychologist and a journalist. These students spend half of each day in a small seminar class and the remainder of the day working on an independent research project on a topic related to the theme of identity. Students meet individually with the faculty as they work on their independent projects. All students receive stipends that enable them to dedicate themselves full-time to the program. These intensive educational experiences are the first chance many of the students have had to fully immerse themselves in a scholarly pursuit.

Students are accepted into the program and attend a one-day orientation during the spring semester. At the orientation, students are welcomed to the program and told that it will be an opportunity for them to form a different sort of community—one that is centered around shared learning. During the summer program the development of scholarly community is encouraged during research meetings, field trips, and workshops. Group and individual advising sessions are designed to encourage academic planning, refinement of career goals, and preparation for transfer by providing a

roadmap for success. The development of identity is stimulated by explicit reflection on the academic nature of the program. Students are encouraged to take academic risks and explicitly told that they will receive the support necessary to help them succeed. Since the summer of 2012, we have utilized ePortfolios to support and assess students' scholarly development and reflection. The program culminates with a conference at which students present their research, sharing their academic identity with family members, friends, and representatives from their home institutions.

The B&B program has served over 450 students, 73% of whom have transferred to four-year institutions. This transfer rate is substantially higher than rates generally reported for community college students. For example, Hossler et al. (2012) reported that only 26% of community college students transfer to four-year schools within five years. This rate may have been depressed by the fact that many students at community colleges only plan to complete associate's degrees. However, even among students who express the intention to obtain a bachelor's degree, the transfer rate is only 36% (Mullin, 2012).

We have observed changes in academic identity and future orientation in our students. Five years ago, we began collecting data on identity shift using the Twenty Statements Test (Kuhn & McPartland, 1954). Students completed the phrase "I am" twenty times, once during the first week and once during the final week of the program. Students were instructed to complete the measure quickly; the only restriction was that they must finish the phrase differently in each of the twenty responses. We found that by the end of the program, students were more likely to describe themselves in academic ways (e.g., as "scholars," "lab rats," and "geeks") than they were at the beginning of the program. They were also more likely to describe their long-term goals (e.g., to "be a scientist," "make a difference," or "get my degree") than to focus on their current status (Singer-Freeman & Bastone, 2011, 2013; Singer-Freeman, Bastone, & Skrivanek, 2014). Miller and Morgaine (2009) found that the reflective practices embedded in ePortfolio creation helped students to develop an academic identity as they engaged in complex projects. Thus, the inclusion of ePortfolios into our program seemed likely to encourage the development of academic identity in our students.

The constructs of academic identity and future orientation are similar to those of academic self-efficacy and academic goals, which have been found to be moderately related to academic persistence (Robbins et al., 2004). We believe that the development of a sense of academic identity and future orientation will support students' identity as a member of a community of scholars. We hypothesize that these identity shifts will support persistence in the face of the difficulties

that students are likely to encounter upon transfer. Accordingly, we have sought other ways to develop and assess these characteristics.

In the current work, we describe our use of ePortfolios to support reflection and assess changes in students' identity. Although students included evidence of learning as well as reflective writing in their ePortfolios, we focus the current work on the reflective writing, as we believe that this constitutes a unique contribution to the existing literature on ePortfolios (see Bastone, 2013 for a summary of our learning outcomes data). We compare differences between identity shifts that are documented in ePortfolios to those seen in the Twenty Statements Test. We hypothesized that: (1) over time, students' ePortfolios would show increased evidence of academic identity, future orientation, and scholarly identity; (2) over time, students' Twenty Statements Tests would show increased evidence of academic identity and future orientation; (3) within individual measures, individual students would show continuity over time; and (4) individual students' responses to the two measures would be related.

Method

Participants

The B&B program included 45 students in 2012 and 42 students in 2013. We included in our analyses all participants who either: (a) produced at least one journal entry during the first two weeks of the program and one entry during the final two weeks of the program; or (b) completed both Twenty Statements Tests. This resulted in a sample of 81 students (54 females and 27 males), with 41 students from 2012 and 40 from 2013. Forty-three participants were working in laboratory groups and 38 were enrolled in the interdisciplinary class. Our sample included 41 African Americans, 24 Latinos, 12 Caucasians, three Asians, and one Native American. Of the 81 students in our sample, 74 completed the Twenty Statements Tests and 60 completed the ePortfolio journal entries. Fifty-four students completed both measures at both times. This subset included 21 students from 2012 and 33 students from 2013 (29 working in laboratory groups and 25 enrolled in the interdisciplinary class).

Procedure

ePortfolios. We introduced the program cohort to the Mahara ePortfolio system during the second day of the summer program in 2012 and 2013. We suggested that ePortfolios could become students' social media pages for their scholarly identities. At the initial ePortfolio workshop, students created ePortfolio pages, wrote journal entries describing their first few days in

the program, and uploaded the program learning goals (see Table 1 for science learning goals). Following the first meeting, we held weekly workshops in which students wrote journal entries and uploaded evidence of their learning, such as annotations of research articles, written assignments, lab notes, current résumés, photographs and videos of their lab work and projects, and PowerPoint presentations. In 2013, during the first ePortfolio meeting we also asked students to write a reflective essay describing the best class they had ever taken and reminded students to journal at each subsequent meeting. In all other ways, the same protocol was followed both years.

The Twenty Statements Test. Both years, students completed the Twenty Statements Test on the second and the third-to-last days of the program. Students were encouraged to complete the measure as quickly as they could and were asked to describe themselves as they would to a person they were meeting for the first time. In 2012, students completed paper versions of the test. The first test was completed during a scavenger hunt (the same protocol that had been used in previous years), and the final version was completed during a group meeting. In 2013, students completed both tests electronically in a computer lab. The first test was completed at the same time as a reflective survey, and the final test was completed during the final ePortfolio session.

Coding. Students produced between zero and nine journal entries. There was a great deal of variability in the first date of journaling and the initial frequency of journaling. Accordingly, we averaged responses to all entries that occurred within the first two weeks of the program to create an Initial score and entries that occurred in the final week to create a Final score. We coded journal entries for the number of times they referred to: (a) academic identity, through references to scholarly thoughts or accomplishments; (b) future orientation, reflected in statements describing long-term goals and plans; and (c) scholarly community, indicated by statements describing relationships in the context of learning. Every sentence clause was coded as a single element. A single clause could be counted as an instance of more than one coding category. For example, "I am going to do better in school next year" would be coded as evidence of both academic identity and future orientation. Several students included the research abstract that was published in our conference program in their final journal entry. This was coded as a single reference to academic identity in order to avoid inflating academic identity references in the final journal entries.

We calculated initial and final scores for the Twenty Statements Test. Responses were coded into 30 categories that were then collapsed into two variables of interest: (a) academic identity, including references to

Table 1
Learning Outcomes for Science Students

Portfolio sections	Competencies/learning outcomes	Types of evidence
Foundations	Identifies hopes and goals for experience Identifies relevant prior coursework and other experiences	Reflective journal entry
Research design	Understands goals of the project Understands research design Articulates research hypothesis being tested Understands how design allows hypothesis to be tested	Interim and final reports Entries in journal
Literature	Is familiar with important research in the area Understands contribution to existing knowledge	Annotations Interim and final reports
Research skills	Acquires hands-on lab skills Successfully uses more complicated equipment Demonstrates appropriate lab behavior and safety Demonstrates good lab notebook skills Performs calculations for making samples Organizes and interprets data, communicates results	Experimental results Interim and final reports
Drafts/revisions	Works with team to draft research abstract Works with team to draft final presentation Uses faculty feedback to revise work	Abstract Interim and final reports Submissions to conferences
Final presentation	Presents work orally with confidence and clarity	Final report
Scholarly identity	Masters lab/field work etiquette Develops collaboration skills Develops confidence in sharing ideas in group Makes plans for academic future Refines ideas about possible careers Identifies learning and insights from experience Identifies impact of experience on future plans	Journal entries Interim and final reports

academic skills and academic roles; and (b) future orientation, reflected in statements describing long-term goals and plans. As was the case for the ePortfolio coding, a single clause could be counted as an instance of more than one coding category. Our coding criteria for academic identity and future orientation were designed to measure the same underlying constructs in ePortfolios and the Twenty Statements Test. However, scholarly community was only examined in the ePortfolio journal entries.

Results

ePortfolios

The average number of times students referred to academic identity, future orientation and scholarly community in ePortfolios are reported as a function of program and time in Table 2. As can be seen in Table 2, students in both programs (lab and class) increased in the expression of all measured variables over the course of the program. It is also clear that references to academic identity are more common than references to future orientation or scholarly community. We calculated a mixed between-within subjects analysis

of variance (ANOVA) to assess the impact of the two programs (lab, class) on each of our three identity variables (academic identity, future orientation, scholarly identity) across the two time periods (initial, final) during the two years in which ePortfolios were created (2012, 2013). We also calculated correlations to assess the relationship between individual references to our variables across time and tasks (see Tables 3 and 4).

Academic identity. There were no significant interactions among time, program, and year. We observed a main effect for time, Wilks' Lambda = .90, $F(1,56) = 6.12$, $p < .05$, partial eta squared = .10, with the average number of references to academic identity rising from 3.9 to 4.75. We also observed a main effect for year, $F(1,56) = 6.20$, $p < .05$, partial eta squared = .10, with the average number of references to academic identity being higher in 2013 (4.58) than in 2012 (3.78). Not surprisingly, we observed a significant correlation between references to academic identity in the ePortfolios during the initial and final weeks, $r(60) = .46$, $p < .001$. There was continuity in the extent to which individual students expressed academic identity over time. However, there was no observed relationship between expressions of academic identity in the Twenty

Table 2
References to Academic Identity, Future Orientation, and Scholarly Community in ePortfolios

Measure	Initial		Final	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Academic Identity	3.90	2.23	4.75	2.41
Lab Students (<i>n</i> = 30)	3.84	2.51	5.00	2.81
Class Students (<i>n</i> = 31)	3.95	1.96	4.52	1.99
Future Orientation	.32	.57	.61	.87
Lab Students (<i>n</i> = 30)	.33	.57	.66	1.08
Class Students (<i>n</i> = 31)	.31	.42	.56	.63
Scholarly Community	.48	.64	1.27	1.21
Lab Students (<i>n</i> = 30)	.59	.73	1.69	1.31
Class Students (<i>n</i> = 31)	.37	.53	.87	.97

Table 3
Correlations over Time within Measures

Measure		Initial-Final	<i>p</i> value
ePortfolio	Academic identity	.46	< .0001
	Future orientation	.22	.09
	Scholarly community	.20	.14
Twenty Statements	Academic identity	.35	.003
	Future orientation	.32	.005

Table 4
Correlations between Measures

Measure		ePortfolio-Twenty Statements	<i>p</i> value
Academic Identity	Initial	-.08	.57
	Final	.11	.44
Future Orientation	Initial	.24	.08
	Final	-.04	.75

Statements Test and similar expressions in the ePortfolios (see Table 4).

Future orientation. There were no significant interactions among time, program, and year. We observed a main effect for time, Wilks' Lambda = .91, $F(1,56) = 5.62$, $p < .05$, partial eta squared = .09, with the average number of references to future orientation rising from .32 to .61. There were no other significant main effects. Future orientation, as expressed in the ePortfolio during the initial weeks, was not related to expressions of future orientation in the ePortfolio during the final week or to responses reflecting a future orientation in the Twenty Statements Test (see Tables 3 and 4).

Scholarly community. There were no significant interactions among time, program, and year. We observed a main effect for time, Wilks' Lambda = .70, $F(1,56) = 23.58$, $p < .001$, partial eta squared = .30, with the average number of references to scholarly community rising from .48 to 1.27. We also observed a main effect for program, $F(1,56) = 6.98$, $p < .01$, partial eta squared = .11, with the average number of

references to scholarly community being higher in students who were engaged in lab science (1.11) than in those who were in the interdisciplinary class (.61).

Twenty Statements Test

The average number of times students referred to academic identity and future orientation in response to the Twenty Statements Test are reported as a function of year and time in Table 5. As can be seen in Table 5, it appears that the results differed as a function of Year. When compared to the ePortfolio entries, there appears to be less of an emphasis on academic identity and more frequent expressions of future orientation. We calculated a mixed between-within subjects ANOVA to assess the impact of the two programs (class, lab) on each of our two variables (academic identity, future orientation) across the two time periods (initial, final) during the two years in which ePortfolios were created (2012, 2013).

Academic identity. There were no significant interactions among time, program, and year. We observed

Table 5
References to Academic Identity and Future Orientation in Twenty Statements Test

Measure	Initial		Final	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Academic Identity	2.55	1.72	2.74	1.77
2012 (<i>n</i> = 38)	2.11	1.35	2.50	1.74
2013 (<i>n</i> = 36)	3.03	1.95	3.00	1.79
Future Orientation	.91	1.27	1.72	1.87
2012 (<i>n</i> = 38)	.26	.60	1.34	1.48
2013 (<i>n</i> = 36)	1.58	1.44	2.11	2.16

observed a significant main effect for year, $F(1,70) = 4.60$, $p < .05$, partial eta squared = .06, with the average number of references to academic identity being higher in 2013 (3.01) than in 2012 (2.31). We did not observe an effect of time. Responses showing academic identity were not significantly higher in the final week (2.74) than the initial week (2.55). Not surprisingly, we observed a significant correlation between references to academic identity in the Twenty Statements Test during the initial and final week, $r(74) = .35$, $p < .01$. Students who expressed academic identity during the initial week were more likely to express similar sentiments during the final week. There was no observed relationship between expressions of academic identity in the Twenty Statements Test and similar expressions in the ePortfolios (see Table 4).

Future orientation. There were no significant interactions among time, program, and year. We observed a main effect for time, Wilks' Lambda = .84, $F(1,70) = 13.41$, $p < .001$, partial eta squared = .16, with the average number of references to future orientation rising from .91 to 1.72. We also observed a significant main effect for year, $F(1,70) = 13.82$, $p < .001$, partial eta squared = .17, with the average number of references to future orientation being higher in 2013 (1.85) than in 2012 (.82). There were no other significant main effects. As expected, we observed a significant correlation between references to future orientation in the Twenty Statements Test during the initial and final week, $r(74) = .32$, $p < .01$. Students who expressed future orientation during the initial week were more likely to express similar sentiments in the final week.

Sex Differences in ePortfolios and Twenty Statements Test

In order to examine whether sex influenced responses, we calculated the average number of times men and women referred to academic identity, future orientation, and scholarly community in ePortfolios and Twenty Statements Tests (see Table 6). We calculated a mixed between-within subjects ANOVA to assess the

impact of sex (female, male) on each of our three identity variables (academic identity, future orientation, scholarly identity) across the two time periods (initial, final) in ePortfolios. We failed to observe any significant main effects of sex or interactions involving sex. We calculated a mixed between-within subjects ANOVA to assess the impact of sex (female, male) on each of our two identity variables (academic identity, future orientation) across the two time periods (initial, final) in the Twenty Statements Tests. We failed to observe any significant main effects of sex or interactions involving sex.

Discussion

In the current work, we used ePortfolios and the Twenty Statements Test to assess changes in URM community college students' identities over the course of a 5-week summer program. As hypothesized, we found evidence that ePortfolios documented increases in academic identity, future orientation, and scholarly community. We observed continuity in the ePortfolios over time in individual students' sense of academic identity, but not future orientation or scholarly community.

It is not surprising that those who were more academically oriented when the program began would remain so at the end of the program. However, for many, the program offers a first opportunity to develop an identity as a member of a community of scholars. We also provide workshops and individual advising that support students as they refine their future goals. Our finding that students received very low scores for future orientation and scholarly identity during the initial weeks raises the possibility that as the program progresses, these aspects of identity may develop for the first time in many of our students. The nature of journaling may also influence the patterns of continuity and discontinuity observed in individual responses. Because journaling involves reflection on present experiences, entries created at the beginning of a program are less likely to express a focus on a future beyond the program than are later entries. Thus, our

Table 6
Women's and Men's Responses to ePortfolios and the Twenty Statements Test

Measure		Initial		Final	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
ePortfolios (<i>n</i> = 60)	Academic Identity				
	Females (<i>n</i> = 42)	4.19	2.21	4.89	2.61
	Males (<i>n</i> = 18)	3.22	2.18	4.42	1.91
	Future Orientation				
	Females (<i>n</i> = 42)	.33	.62	.70	.97
	Males (<i>n</i> = 18)	.28	.43	.39	.53
	Scholarly Community				
	Females (<i>n</i> = 42)	.48	.63	1.36	1.14
	Males (<i>n</i> = 18)	.47	.67	1.06	1.36
Twenty Statements Test (<i>n</i> = 74)	Academic Identity				
	Females (<i>n</i> = 51)	2.31	1.63	2.71	1.83
	Males (<i>n</i> = 23)	3.09	1.83	2.83	1.67
	Future Orientation				
	Females (<i>n</i> = 51)	.88	1.29	1.53	1.46
	Males (<i>n</i> = 23)	.96	1.26	2.13	2.55

observed increase in future orientation may have been an artifact of our coding criterion, which only classified statements as future orientation if they referred to long-term goals and plans.

We only partially replicated our previous findings using the Twenty Statements Test. We observed continuity over time in individual students' expressions of academic identity and future orientation. This consistency is not surprising; given that The Twenty Statements Test was designed to measure self-attitudes, some stability is to be expected (Kuhn & McPartland, 1954). We found evidence of increased future orientation but not of academic identity. We also found that there were more references to both academic identity and future orientation in 2013 than in 2012. Responses were probably influenced by the way in which the test was administered. In 2012, students wrote responses in sessions that did not include any other writing or reflection. In 2013, students responded on computers as a part of sessions that included a reflective survey (during the first session) and ePortfolio journaling (during the final session). Administering the test in a more academic context (on computers in a classroom) may have evoked higher levels of academic orientation during the initial session than we had seen previously. In our prior research, initial academic orientation scores had hovered around two and had increased to numbers approaching three in the final week (Singer-Freeman & Bastone, 2011, 2013). Comparing our current results to our previous findings, we believe that the major difference is an elevation of the initial sense of academic identity in 2013. We hypothesize that presenting the Twenty Statements Test in an academic context encouraged a

more elaborated sense of academic identity. Alternatively, it is possible that the academic context functioned as a demand characteristic, evoking a larger number of academic self-descriptions that do not reflect true identity.

We hypothesized that ePortfolios would both provide new evidence of scholarly community and replicate evidence of academic identity and future orientation. Unexpectedly, the ePortfolios and the Twenty Statements Test reflected different student identities. Students' responses to both measures included evidence of both academic identity and future orientation. However, individual students responded in dissimilar ways to the ePortfolios and the Twenty Statements Test, suggesting that together the two may paint a more accurate picture of student growth than either would have alone. As expected, the ePortfolios provided evidence of a developing sense of scholarly community, which was not reflected in responses to the Twenty Statements Test. The public nature of ePortfolios may encourage reflection on community in ways that the relatively private Twenty Statements Test does not. It should be noted, however, that because all students completed ePortfolios, we do not have a comparison group. Thus, we cannot conclude that the creation of ePortfolios caused or increased the development of scholarly identity. Further, if ePortfolios enhance students' academic identity or future orientation, we might expect to see a larger increase in the expression of these constructs in the Twenty Statements Test in the current time period than we had seen previously. Although we did not compare responses to the measure in the current time period to the responses obtained prior

to the introduction of ePortfolios, the final rates of academic identity and future orientation are very similar to earlier rates. Thus, it does not appear that ePortfolio creation increases students' sense of academic identity or future orientation. In order to examine more fully the impact of ePortfolio journaling on identity shift, it would be useful to compare the responses of the students in the current study to a group of students who created ePortfolios over five weeks in which they were not in an intensive summer program and to a group of students who kept private journals over the five weeks in which they participated in our intensive summer program.

We hypothesize that ePortfolios may contribute to students' developing sense of scholarly community. Students in both programs made increased references to scholarly community by the end of the program. Interestingly, science students made more frequent references to scholarly community than did students in the identity course. Students working on science projects worked intensively with three other students and a faculty member. Their efforts were united by a common goal. This setting may be particularly conducive to the formation of a scholarly community. In 2012, four out of six science lab groups chose to create group pages in addition to their individual pages. In 2013, we explicitly discouraged the creation of group pages in order to encourage attention to individual pages. However, students continued to review each other's pages, sharing images within lab groups and teaching each other ways to improve page design and content. Because only a small percentage of program alumni transfer to our college, the maintenance of a sense of scholarly community is best achieved electronically. Although we have not yet collected data that allow us to assess changes in scholarly community, we have observed increased activity on our program's social media page over the last two years. This increased online presence suggests that our recent alumni continue to benefit from and actively maintain their membership in a community of scholars.

It is important to note that increased academic identity and future orientation may be most useful when coupled with increased awareness of the steps that must be taken to meet academic goals. Oyserman, Bybee, Terry, and Hart-Johnson (2004) found that at-risk high school students benefitted most from the generation of academic possible selves when these possible selves could be used as self-regulators (e.g., increasing study time). Students also benefitted from feedback on current abilities and information about how to reach their academic goals. Although we did not measure students' developing strategies, our program is designed to encourage students to develop their own roadmaps for academic success. The supportive workshops and advising that are at the core of our program probably increase the effects of the identity

shifts that we have seen. The use of ePortfolios to create academic roadmaps has been successfully piloted at Salt Lake City Community College (Hubert, 2013), and has the potential to help our students to actualize their academic goals. In future work, we plan to promote strategy development more fully by having students incorporate individualized academic roadmaps into their ePortfolios.

The inclusion of ePortfolios appears to have enhanced URM students' experience in the program and has provided us with another window into their developing identities as they engage in undergraduate research, one high-impact practice promoted by the Association of American Colleges and Universities (Kuh, 2008). It is worth noting that we saw identity shifts in students regardless of the program in which they were participating. There is evidence showing the efficacy of intensive summer research programs in encouraging transfer and graduation among URM community college students (Jackson et al., 2013). Less is known about the effects of other types of intensive summer experiences on URM students. We believe that key elements of both programs include complete academic immersion, encouragement of academic risk taking, focus on developing a community of scholars, and advising sessions that encourage academic planning. Identity shifts similar to those evidenced by our students might be present in other high-impact activities (e.g., internships, diversity/global learning, and learning communities), and the use of ePortfolios could have similar value in these contexts.

In the future, we plan to test our hypothesis that identity shifts are associated with increased academic persistence and success. We are hopeful that students will return to their ePortfolios and continue to feel connected to the community of scholars documented therein. Should this sense of connection be maintained, we hypothesize that it will support students as they transfer to institutions that lack a critical mass of URM students and faculty. An enhanced sense of academic identity and future orientation may buffer students against the challenges they are likely to face upon transfer to four-year institutions that lack critical mass (Jackson et al., 2013).

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What Difference Can ePortfolio Make? A Field Report from the Connect to Learning Project

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Connect to Learning (C2L) is a FIPSE-funded project coordinated by LaGuardia Community College (CUNY) that links ePortfolio teams from 24 campuses nationwide into a supportive community of practice. Launched in 2011, C2L focused on exploring and documenting ePortfolio strategies to advance student, faculty, and institutional learning. Working together, the C2L community has developed a rich resource website, Catalyst for Learning: ePortfolio Resources and Research (<http://c2l.mcnrc.org>), that offers data, strategies, and expertise from C2L campuses. Our work has addressed two overarching questions: (1) “What difference can ePortfolio make?” and (2) “What does it take for ePortfolio to make a difference?” Focused on the first question, this article examines C2L findings through three propositions: (1) ePortfolio initiatives advance student success; (2) making student learning visible, ePortfolio initiatives support reflection, social pedagogy, and deep learning; and (3) ePortfolio initiatives catalyze learning-centered institutional change. Based on an array of evidence from campus practices and narratives—along with the C2L Core Survey, administered on campuses across our network—C2L findings advance our collective understanding of the power of integrative ePortfolio practice and its potential to support student, faculty, and institutional learning. Moreover, these findings offer multiple avenues for further research, analysis and theory-building. We believe the future of ePortfolio depends in part on our collective ability to gather, analyze, and share evidence of the difference ePortfolio initiatives can make and, therefore, offer these preliminary findings for broad consideration, testing, refinement and improvement.

The ePortfolio movement is at a crossroads. The field has grown, with large numbers of campuses ready to use ePortfolio for a range of purposes. More than 50% of U.S. colleges and universities now offer some form of ePortfolio experience (Dahlstrom, Dzuiban, & Walker, 2013). Yet in the context of tight budgets and broad concern about completion, accountability and disruptive change, ePortfolio innovators are increasingly asked difficult questions. What difference can ePortfolio make? Can an ePortfolio initiative improve student learning? Does ePortfolio-based outcomes assessment really work? Is ePortfolio worth an investment of institutional resources? What evidence demonstrates the broader value of an ePortfolio initiative? What strategies have produced success for students and institutions? The Connect to Learning project provides an interesting opportunity to consider such questions.

Connect to Learning (C2L) is a FIPSE-funded project coordinated by the Making Connections National Resource Center of LaGuardia Community College (CUNY), in partnership with the Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL). Launched in 2011 and focused on exploring ePortfolio strategies to advance student, faculty and institutional learning, C2L has now completed its third year.

C2L assembled 24 institutions with established ePortfolio projects into a national community of practice. Engaged in a recursive knowledge-generation process, partner campuses represent a cross-section of

higher education, from Boston University and Salt Lake Community College to Manhattanville College, San Francisco State University, Virginia Tech, and Three Rivers Community College.

C2L utilizes a hybrid community-building model that integrates ePortfolios, online conversations, and face-to-face meetings to link campus teams as they explore relevant literature, exchange practices, strengthen ePortfolio pedagogy, and grow their integrative ePortfolio initiative (Eynon, Gambino, & Torok, 2013). Building on this exchange, C2L has created a rich resource website for the field. Released in January 2014, Catalyst for Learning: ePortfolio Resources and Research (Connect to Learning, 2014; <http://c2l.mcnrc.org>) offers data, strategies, and expertise from C2L campuses. Field-tested practices and developmental narratives from C2L campus teams can guide campuses seeking to jumpstart or advance ePortfolio projects. Student portfolios and campus evaluation data flank multimedia resources and analysis by C2L leaders, senior scholars Randy Bass and Helen Chen, and others.

Analyzing an extensive body of documentation, with dimensions ranging from pedagogy to professional development, assessment, technology, and institutional support, C2L has addressed two overarching questions:

- What difference can ePortfolio make? (What does the evidence from the C2L network tell us about the potential value of a sophisticated ePortfolio initiative?)

- What does it take for ePortfolio to make a difference? (What are the strategies and practices used by effective ePortfolio initiatives? What patterns can we see across a diverse network?)

This article, focused mainly on the first question, examines C2L findings organized around three propositions: (1) ePortfolio initiatives advance student success; (2) Making student learning visible, ePortfolio initiatives support reflection, social pedagogy, and deep learning; and (3) ePortfolio initiatives catalyze learning-centered institutional change. In other words, sophisticated ePortfolio initiatives can help colleges and universities address the Completion Agenda while, at the same time, deepen the quality of student, faculty and institutional learning. While C2L evidence is preliminary, it suggests that the power of ePortfolio emerges from its capacity to serve as a connector. An integrative ePortfolio experience can help students link and make meaning from various learning experiences; and an integrative campus ePortfolio initiative can spur connection and collaboration across departments and divisions, catalyzing the growth of institutional learning cultures.

Proposition #1

ePortfolio Initiatives Advance Student Success

At a growing number of campuses with sustained ePortfolio initiatives, student ePortfolio usage correlates with higher levels of student success, as measured by pass rates, GPA, and retention rates.

Legislators, funders, and campuses nationwide are seeking ways to improve student success. C2L campuses have begun to demonstrate that ePortfolio practices correlate with substantially higher levels of student success, as measured by widely recognized indicators, including: course pass rates, GPA, credit accumulation, retention across semesters, and graduation. In this way, the most effective ePortfolio initiatives help their institutions address what is widely known as the Completion Agenda.

An important caveat: Definitive proof of causal connections related to student learning is always elusive. Operating with minimal staff and budgets, C2L campus teams lack the ability to conduct randomized control group studies. The network spans diverse campus contexts, marked by differences in focus, purpose, and level of student preparation. Campus methods of gathering data therefore have varied. Although the C2L data has limitations, it is nonetheless suggestive and intriguing.

A Growing Body of Success Data

In its initial years, the ePortfolio field produced relatively little evidence that traced the relationship of

ePortfolio and student success (Bryant & Chittum, 2013). But there have been some efforts to document and analyze this linkage. The landmark Cambridge, Cambridge, and Yancey (2009) collection, *ePortfolio 2.0, Emergent Research on Implementation and Impact*, presented 22 studies drawn from 30 campuses. Two studies discussed data on ePortfolio's relationship to student success. Hakel and Smith (2009) noted that, at Bowling Green State University, students who built ePortfolios demonstrated higher grade-point averages, credit accumulation, and retention rates than did control groups. Data in an article on LaGuardia Community College (Eynon, 2009b) showed that students in ePortfolio-intensive courses across the campus had a course pass rate of 74.9%; for students in non-ePortfolio sections of comparable courses, the pass rate was 69.1%. Comparison of next-semester retention rates showed that students enrolled in at least one ePortfolio-intensive course had a return rate of 75%; for the comparison group, the rate was 70.0%.

LaGuardia has continued to document and report on data from a wide range of courses. For example, a 2012 report to the U.S. Department of Education noted:

Data provided by the Office of Institutional Research over a period of years suggests that students building ePortfolio are more likely to return the following semester; and 2011-12 was no different. The composite one-semester retention or graduate rate for student in impacted courses [in 2011-12] was 80.4%, versus 61.7% for students in comparison courses . . . Likewise, students enrolled in impacted courses had higher course completion (96.4%, + 1.8 percentage points), course pass (79.7%, + 8.2 percentage points) and high pass—C and above (77.7%, + 9.9 percentage points)—rates than students in comparison courses. (LaGuardia Community College, 2014c, para. 14)

Meanwhile, other campuses have begun to document the relationship of ePortfolio use to student success. A constellation of C2L campuses now present ePortfolio-related student success evidence. Examples include:

- At Rutgers University (2014), in the Douglass Women's College, ePortfolio was introduced into a required first semester "mission" course in 2008-2009; student performance improved significantly. The average grade point in the course for the two semesters before ePortfolio was introduced was a B (3.213); in nine semesters with the ePortfolio, students earned an average of a B+ (3.508). Students' GPAs across all of their courses improved, as well. Before the ePortfolio, their average cumulative

- GPA was 2.933; in the nine semesters since, average cumulative GPA has been 3.095.
- San Francisco State University (2014) integrated ePortfolio into the Metro Health Academy, a learning community for high-risk students. Data shows that retention rates at every stage compare favorably with university-wide averages (see Figure 1).
 - Indiana University-Purdue University Indianapolis (IUPUI, 2014a) used ePortfolio in several areas of the University. In many sections of IUPUI's First-Year Seminar, students completed an ePortfolio-based personal development plan (ePDP). Data IUPUI (2014c) analyzed with a linear regression to account for high school GPAs, SAT scores, and other variables shows that students in First-Year Seminar sections that required an ePDP had significantly higher fall cumulative GPAs (2.82) compared to students in sections that did not require the ePDP (2.73).
 - At CUNY's Queensborough Community College (2014a), all incoming students were enrolled in First Year Academies. One sector of the Academies used ePortfolio, the other sectors did not. Compared to College benchmarks, the Academy approach demonstrated significant improvement in pass rates and next semester retention (Queensborough Community College, 2014b). The improvements in the ePortfolio group were larger still (see Figure 2).
 - Tunxis Community College (2014) in Connecticut, a year-long comparison between ePortfolio and non-ePortfolio sections of developmental English courses showed that At ePortfolio sections had 3.5% higher pass rates and an almost 6% higher retention rate. Meanwhile, data showed that students across the college who had taken multiple courses with ePortfolio, from first year to capstone, were more likely to be retained than students who had fewer or no ePortfolio exposures (Tunxis Community College, 2014; see Figure 3).

Figure 1
San Francisco State University Retention Rates of Metro Health Academy At-Risk Students Compared to University-Wide Averages

San Francisco State University		
	Metro Academy, ePortfolio First Year/ First Time Students	All SFSU First Year/ First Time Students
1 Yr Retention Rate	90.0%	79.3%
2 Yr Retention Rate	79.0%	60.0%
4 Yr Grad'n Rate	24.6%	14.9%

Note. (San Francisco State University, 2014)

Figure 2
Improvements of ePortfolio Group Students at CUNY's Queensborough Community College

Queensborough Community College		
Retention	Percent	Intervention
Fa 2006-Sp 2007 Retention	65%	Benchmark
Fa 2009-Sp 2010 Retention	88%	Freshman Academy
Fa 2009-Sp 2010 Retention	97.8%	FY Academies w/ eP

Note. (Queensborough Community College, 2014b, Table 3)

As discussed above, this data has limitations, and is not in any way conclusive. Nonetheless, this constellation of outcomes data does represent an emergent pattern, and compares well to the kinds of data widely used for decision-making by state agencies, funders, and higher education institutions. As such, it provides a suggestive body of evidence for the proposition that sophisticated ePortfolio initiatives can demonstrate a correlation between ePortfolio usage and improved student success.

Other aspects of this data are also worth noting. One is that positive outcomes are seen across institutional type. The impact on student success at the community college level is particularly notable. But positive outcomes have also been documented at private liberal arts colleges, urban public universities, and Research I institutions.

It is also notable that, in many of these cases, ePortfolio is used in conjunction with other high-impact practices (Kuh, 2008), such as First Year Experience programs, learning communities, and capstone courses. When sharing their data, SFSU leaders noted that the benefits for their students could not be attributed to ePortfolio alone, but might also be due to the learning community element of the Metro Health Academies. The QCC data, a comparison of first-year learning communities with and without ePortfolio, provides an interesting counter-point, as does data from Rutgers and IUPUI. And that underscores an interesting point. The fact that evaluation has been conducted on multiple campuses with a variety of approaches may limit direct comparability; but it also creates breadth and diversity that evaluation focused on one campus rarely displays.

In fact, across the C2L network, we find that much of the data comes from contexts in which ePortfolio use is linked with capstone courses, active learning pedagogy, and experiential learning. We suggest that this supports an emergent proposition that the most powerful ePortfolio practice is inherently connective and integrative; and that part of what it does is connect and enhance the impact of other High Impact Practices. In this sense, ePortfolio could be understood as what Kahn and Scott (2014d) from IUPUI have called a “meta-high impact practice.”

It is worth noting what this data does not show. If it begins to suggest that ePortfolio practice can support improved student success, it does not explain why or how. How does ePortfolio shape the student learning experience? Does ePortfolio use advance students’ sense of belonging to the campus community? Their sense of educational self-efficacy? Their ownership of their education? What kinds of ePortfolio pedagogies are effective? What support structures are required to

help students and faculty take advantage of the ePortfolio? Success data by itself cannot answer these questions. Other kinds of data can, however, help us begin to explore these questions and better understand the ways ePortfolio affects the quality of the student learning experience.

Proposition #2

Making Student Learning Visible, ePortfolio Initiatives Support Reflection, Social Pedagogy, and Deep Learning

Helping students reflect on and connect their learning across academic and co-curricular learning experiences, sophisticated ePortfolio practices transform the student learning experience. Advancing higher order thinking and integrative learning, the connective nature of ePortfolio helps students to construct purposeful identities as learners.

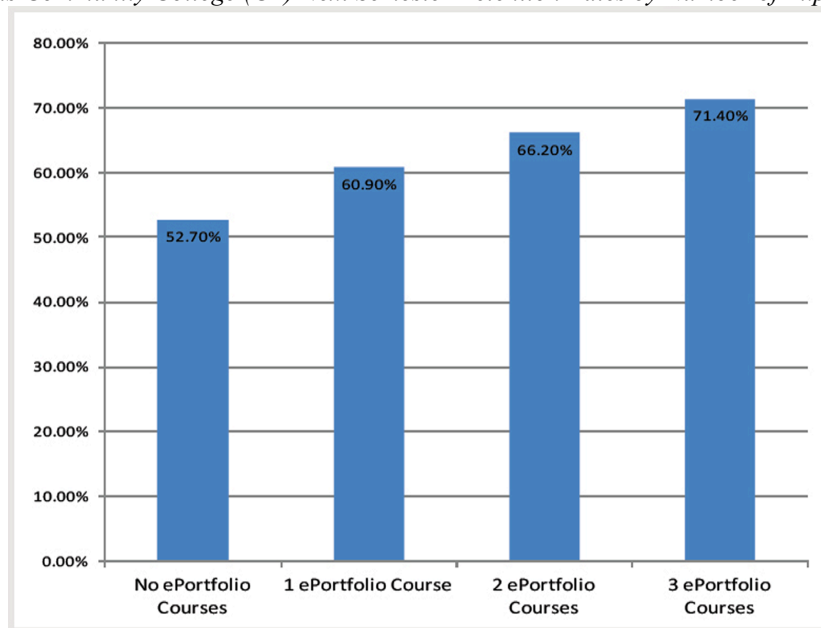
While student success data is important, it provides limited insight into the ePortfolio learning experience. Those who have less experience with ePortfolio may make a quick leap from such data to an assumption that implementing ePortfolio will automatically lead to improved student outcomes. Those with more experience know, however, that the value of ePortfolio for students depends on how it is implemented: the pedagogy and practices of faculty and staff, as well as broader support structures.

With this in mind, C2L has taken two steps. First, C2L campuses are documenting the practices they find most powerful for enhancing student learning. Available on the Catalyst website, this documentation illuminates the pedagogy used by ePortfolio faculty across campuses. Second, C2L campuses have also been surveying students, seeking insight into the ways students understand their ePortfolio experience. As outlined below, campus practices and the survey data both suggest that the value of the ePortfolio experience emerges from the ways it makes learning visible, facilitating connective reflection, sharing, and deeper, more integrative learning.

Making Learning Visible—Reflection

What does it mean to make learning visible? Most obviously, ePortfolios can make the learning process more visible to students themselves. Curating a body of their own learning artifacts, collected over time and in different settings, provides students with opportunities to examine and reflect on their learning. As experienced ePortfolio practitioners know, however, meaningful reflection does not just happen. Skillful and intentional pedagogy is required from faculty and staff.

Figure 3
Tunxis Community College (CT) Next Semester Retention Rates by Number of Exposures



To strengthen reflective pedagogy, C2L teams studied the ideas of John Dewey as summarized by Rodgers (2002). In “Defining Reflection: Another Look at John Dewey and Reflective Thinking,” Rodgers (2002) posited four criteria for meaningful reflection:

- Reflection as connection: Dewey posited experience and reflection as essential and complementary elements of learning. Rodgers (2002) wrote, “Reflection is a meaning-making process that moves a learner from one experience into the next with a deeper understanding of its relationship with and connections to other experiences and ideas” (p. 845). Reflection is critical to integrative learning: making links across semesters and disciplines—and between coursework and personal, family, and community life.
- Reflection as systematic and disciplined: Some see reflection as vague musing. But Rodgers argues that “Reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry” (p. 845). She laid out Dewey’s reflective process, moving from experience to description, analysis, and application of insight to new actions.
- Reflection as social pedagogy: Our most familiar image of reflection is individual and solitary. But Dewey suggests that meaningful

reflection often happens in community, in conversation and interaction with others.

- Reflection as an attitude towards change: Reflection is not only cognitive but also affective, involving openness, curiosity, and a readiness to reconsider long-held ideas about oneself and the world. “Reflection” writes Rodgers, involves “attitudes that value the personal and intellectual growth of oneself and others” (p. 845).

C2L campus teams studied Rodgers and built her insights into reflective pedagogy and practice. Documented and discussed in the Pedagogy sector of the Catalyst website (<http://c2l.mcnrc.org/pedagogy/>), their practices take advantage of the ways in which ePortfolio makes student learning visible to prompt powerful reflective processes and help students integrate their learning. Reflective strategies used by C2L campuses include scaffolding designed to help students to:

- Connect diverse course-based experiences and build reflective skills. ePortfolio-based reflections at Pace University’s (2014a) Media and Communication Arts graduate program begin as lower-level reflection on specific artifacts; a reflective essay completed at semester’s end elicits higher level reflection, asking students to examine their own strengths and weaknesses. Staged assignments in Salt

Lake Community College's (2014a) Geospatial Program move students from simple process-based reflections to more integrative reflection and synthesis by the end of the program.

- Link course-based learning to co-curricular learning and advisement. At Rutgers University's (2014) Douglass College, advisors structured ePortfolios to help students connect academic pathways to co-curricular programs and service learning, building leadership skills. At IUPUI (2014a) and CUNY's Stella and Charles Guttman Community College (2014a), advisors used ePortfolio to support educational planning and facilitate an effective transition to college life.
- Connect their learning to academic competencies and professional standards. Boston University's (2014a) College of General Studies used ePortfolio to help students understand, focus on, and document growth around key general education competencies. In the Nursing courses at Three Rivers Community College (2014a), students used reflection to help demonstrate the ways they met professional accreditation requirements.

These strategies are not mutually exclusive, of course. In the First Year program of Virginia Tech's (2014) College of Natural Resources, students use their ePortfolios to deepen their understanding of the discipline, connect with peer advisors, and think about their personal commitment to sustainability and environmental protection. At Three Rivers Community College (2014a), nursing students use ePortfolio in every course offered by the program; they not only document competency-focused achievements, but also reflect on their clinical experiences, examine their personal attitudes and biases towards different types of patients, and work to develop their identities as nursing professionals.

As C2L campuses integrate such reflective strategies into their ePortfolio practices, they use survey data to explore student perspectives on the experience. In 2011, C2L leaders developed a C2L Core Student Survey, administering it in four subsequent semesters. Based in part on questions previously used at LaGuardia and campuses taking part in earlier projects led by LaGuardia's Making Connections National Resource Center (e.g., Bronx Community College), this instrument was designed to capture the attitudes and perspectives of students taking ePortfolio courses. Several additional items from the National Survey of Student Engagement were also included, with permission and slightly modified to fit the purpose of the C2L project. Data from four semesters of student

responses ($n = 9,542$) has now been collected from campuses across the C2L network.

The C2L Core Survey had three main goals: First, capturing student perspectives on ePortfolio courses, the survey offered evidence that can deepen our understanding of how ePortfolio usage affects the student learning experience. Second, survey evidence complemented and contextualized the individual student ePortfolios available on the Catalyst site. Lastly, the large data set offered by this multi-campus implementation created analytical opportunities that went beyond smaller surveys done only at individual schools and programs. As an overview of C2L's findings, this article can only begin to tap the richness of this survey data; articles examining this data in greater depth are planned.

Administered on campuses where faculty are implementing reflective strategies such as those listed above, some C2L Core Survey questions explicitly address the ways in which the ePortfolio experiences shaped student learning (see Table 1). For example, students used a four-part scale to indicate their level of agreement or disagreement with the statement "Building my ePortfolio helped me succeed as a student." Nearly two-thirds (63.3%) of respondents agreed or strongly agreed with this statement. Similarly, 65.6% agreed or strongly agreed that "Using ePortfolio has allowed me to be more aware of my growth and development as a learner." And, 70.0% agreed or strongly agreed that "Building my ePortfolio helped me to make connections between ideas." This suggests that the integrative ePortfolio experience helped students build a more holistic self-portrait, a way of understanding themselves as learners.

The C2L Core Survey included open-ended questions about the ePortfolio experience, asking students how it shaped their learning. The replies create a rich body of qualitative evidence; while this data is still being fully analyzed, it is clear that it extends patterns demonstrated in the quantitative data. Sample responses include: "ePortfolio has supported my growth and learning because I was able to bring my ideas together. I learned that I have accomplished a lot throughout my college career"; "ePortfolio has introduced me to my hidden goals in my life. Jotting down my goals in a place helped me work on them"; "I got to show who I was. While creating my ePortfolio, I learned more about myself"; and

The best part was to be able to apply my own work into it . . . I love how it links to assignments that you have done because these assignments can help other students continue their education. I also enjoy that I grew from a learner and I developed skills that I didn't know before. It helps me connect between new ideas and old ones.

Table 1
Student's Integrative ePortfolio Experiences

C2L core survey items	% Agree or strong agree
Building my ePortfolio helped me think more deeply about the content of the course.	62.0%
Building my ePortfolio helped me succeed as a student.	63.3%
Someday, I'd like to use my ePortfolio to show what I've learned and what I can do to others, such as potential employers or professors at another college.	70.0%
Using ePortfolio has allowed me to be more aware of my growth and development as a learner.	65.6%
Building my ePortfolio helped me to make connections between ideas.	70.0%

Table 2
Deep Learning Questions Drawn from the National Survey of Student Engagement

C2L core survey items To what extent has your experience in this course . . .	% Quite a bit or very much
contributed to your knowledge, skills, and personal development in in writing clearly and effectively?	73.5%
contributed to your knowledge, skills, and personal development in in understanding yourself?	74.1%
emphasized applying theories or concepts to practical problems or in new situations?	73.6%
emphasized synthesizing and organizing ideas, information, or experiences in new ways?	78.3%

These ePortfolio-specific questions were flanked by questions drawn from the National Survey of Student Engagement (see Table 2). Asked how much their coursework “Contributed to your knowledge, skills, and personal development in understanding yourself,” 74.1% responded with *quite a bit* or *very much*, reinforcing the idea that reflective ePortfolio experiences supported self-understanding, or what Baxter Magolda, Hodge, and Haynes (2009) termed “self-authorship.” Student responses were also strong on questions related to integrative and higher order thinking, key elements in deep learning. Drawing on the work of Tagg (2003) and others, Laird, Shoup, and Kuh (2005) linked these questions to what they call deep-level processing: reflection on relationships between pieces of information; focusing on substance and underlying meaning; and personal commitment to understanding. Asked, for example, about engagement in “synthesizing and organizing ideas, information, or experiences in new ways,” the percentage of C2L students who responded with *quite a bit* or *very much* was 78.4%.

The practices and data from C2L campuses, while not conclusive, suggest that reflective ePortfolio pedagogy helps students make meaning from specific learning experiences and connections to other experiences, within and beyond the course. Integrative ePortfolio strategies prompt students to connect learning in one course to learning in other courses, co-curricular activities, and life experiences. Ultimately, students recursively connect their learning to

consideration of goals and values, constructing a more intentional and purposeful sense of self.

Making Learning Visible—Social Pedagogy

While students' integrative reflections on their own learning are invaluable, making learning visible has other facets, as well. Used with what Bass (2014b) has called “social pedagogy,” the ePortfolio can facilitate collaboration and exchange, learning-centered connection with faculty, students, and other viewers outside the campus. In a working paper shared with C2L campuses, Bass and Elmendorf (2012) wrote:

We define social pedagogies as design approaches for teaching and learning that engage students in authentic tasks that are communication-intensive, where the representation of knowledge for an authentic audience is absolutely central to the construction of knowledge in a course . . . By extension, through the use of integrative strategies such as ePortfolios, social pedagogies are also design approaches that help students deepen their reflections, build links across courses and semesters, and bridge between formal curricular and co-curricular learning. (p. 2)

Responding to Bass and Elmendorf's (2012) paper, C2L faculty developed activities that used ePortfolio with social pedagogy and shared them on the Catalyst website. Reviewing these practices, Bass (2014b) found

four ways in which campuses were using social pedagogy with ePortfolio:

- Peer response and social interaction deepen individual work. In Guttman Community College's (2014a) Arts in NYC assignment students were asked to respond to each other's comments via the course ePortfolio and to use each other's ideas to generate insight and analysis into their own writing. A staged reflective process was used in Northeastern University's (2014a) master's level education courses, starting with social exchange and leading towards more individual reflections.
- Team-based work creates a collectively produced artifact. In Boston University's (2014a) General Studies second-year capstone team project, students spent the last 4 weeks of their sophomore year working in groups of five to seven to research a contemporary problem; they created a presentation that described the problem and its contexts and proposed a real-world solution. Using an ePortfolio facilitated the collaboration and shared the presentations for review by the class.
- The use of an external audience raises the stakes for production. For example, the University of Delaware (2014a) had teacher candidates create a "defense of mastery," presentation-style ePortfolio for review by external viewers, thus creating a high stakes setting that replicated a position interview process.
- The organization of students into an expert-like knowledge community of practice engages them with their learning. In Pace University's (2014a) microbiology course, students spent 8 weeks developing expertise on a species of bacteria, which they presented as a resource to other courses using ePortfolio. In IUPUI's (2014a) art history capstone course, students engaged in an extensive peer review process of each other's portfolios and reflected on what they saw and learned. Through this process, they began to understand that their own paper was part of a wider research possibility, and that research is a way of thinking rather than a page and word limit.

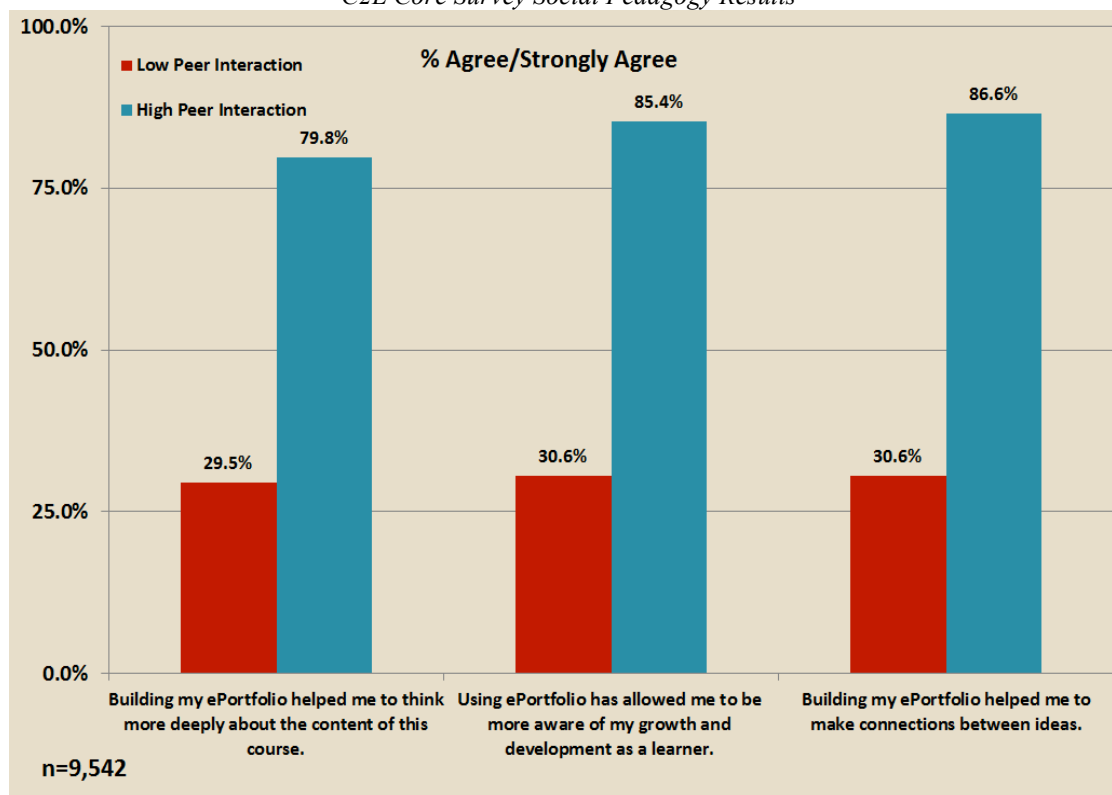
Based on his review, Bass and Elmendorf (2012) argued that a social pedagogy for ePortfolio—asking students to use ePortfolio to articulate their insights into learning to authentic audiences—can help them engage more deeply with content and concepts, integrate their understandings, and develop a more purposeful approach to learning.

Four semesters of C2L survey data supports the idea that the ePortfolio experience is enhanced when an audience looks at and responds to the ePortfolio. The role of audience was explored from two perspectives: instructors and peers. The role of instructors in ePortfolio-based interaction was analyzed based on students' reports that instructors had reviewed, discussed, and given feedback on their ePortfolios. A scale was created by taking the mean responses to three instructor-related items, such as "My instructor provided useful feedback on my ePortfolio." The Cronbach's alpha for these three items was .85. The values for the instructor feedback were normalized on the same scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). *Strongly disagree* and *disagree* were collapsed into what is described as "low instructor feedback," and *agree* and *strongly agree* were collapsed into "high instructor feedback." An independent-samples *t* test was conducted to compare the impact of low and high instructor feedback on these items. For each item, students who recognized instructor feedback as an important component of their ePortfolio development (high feedback) reported significantly higher course experiences, as compared to their peers in the low feedback group. Across four semesters, 75.4% students with high levels of instructor feedback agreed or strongly agreed with the statement "Using ePortfolio has allowed me to be more aware of my growth and development as a learner." For students with low levels of instructor feedback, the comparable figure was 20.6%.

Similarly, a peer feedback scale was created by taking the mean of the responses to two comparable peer-related items, asking students whether other students had reviewed and given them feedback on their portfolios. The Cronbach's alpha for these items was .81. Again, *strongly disagree* and *disagree* were collapsed into what is described as low peer feedback and *agree* and *strongly agree* were collapsed into high peer feedback. An independent-samples *t* test was conducted to compare the impact of low and high peer feedback on these items. For each item, students who recognized peer feedback as an important component of their ePortfolio development (high feedback) reported significantly higher course experiences, as compared to their peers in the low feedback group. This data reveals that 85.4% students who reported high levels of student feedback agreed or strongly agreed with the statement "Using ePortfolio has allowed me to be more aware of my growth and development as a learner." The figure for students who received low levels of student feedback was 30.6%.

This striking pattern is also found in response to other items, such as "Building my ePortfolio helped me think more deeply about the content of this course," "Building my ePortfolio helped me succeed as a student," and "Building my ePortfolio helped me make

Figure 4
C2L Core Survey Social Pedagogy Results



connections between ideas.” When students know someone is looking at their ePortfolio, its value as a vehicle for deepening contextualized learning is enhanced dramatically (see Figure 4).

A similar pattern emerged around questions in the C2L Core Survey that were drawn from the NSSE and associated with higher order and integrative thinking. For example, asked how much their course involved “applying theories or concepts to practical problems or in new situations,” 82.4% students with high levels of instructor interaction said quite a bit or very much; for students with low levels of instructor interaction, the figure was 36.4%. On the same question, among students who reported high level of student interaction around the ePortfolio, 86.7% agreed or strongly agreed. Among students who reported low levels of interaction, the figure was only 56.0%.

This data further suggests that a social pedagogy for ePortfolio enhanced the integration of academic learning with the processes of identity construction. Asked how much their course “contributed to [their] knowledge, skills, and personal development in understanding [oneself],” 85.3% of students who reported a high degree of ePortfolio-based interaction with other students said quite a bit or very much. Of

students who reported a low degree of interaction, the comparable figure was 55.5%.

Qualitative data from the Core Survey included many responses highlighting the importance of audience and interaction to the portfolio experience. “ePortfolio has allowed me to receive feedback and criticism of my work from fellow classmates. I have learned where my weaknesses and strengths are as a designer,” commented one student. “The best part was seeing other students’ ePortfolios and getting to know them and their experiences,” noted a second. Wrote a third: “The best part of working with ePortfolio is that I can share this with people and they can see what I have done in school.”

This preliminary data analysis suggests that ePortfolio processes shaped by reflective and integrative social pedagogies make learning visible, helping students to link different parts of their learning and connect their own learning to others. A large majority of students reported that building an ePortfolio “helped me to make connections between ideas” and “apply theories or concepts to practical problems or in new situations.” This supports the argument that ePortfolio’s value is rooted in its connective power, its ability to help students to link a range of experiences. In

“It Helped Me See a New Me: ePortfolio Learning and Change at LaGuardia Community College,” Eynon (2009a) did a close reading of multiple ePortfolios and examined survey data to argue that integrative ePortfolio practice engaged LaGuardia students in a process of identity construction, helping them understand themselves as learners and emerging professionals. The C2L data further indicates that interacting on ePortfolio helps students understand themselves as learners, suggesting that ePortfolio experiences shaped by integrative social pedagogies help students take ownership of their learning, building not only academic skills but also the more affective understandings of self seen by Keeling (2006), Baxter Magolda et al. (2009), and others as critical to student success and meaningful education.

In recent decades, cognitive researchers and educational theorists from Keeling (2006) to Baxter Magolda et al. (2009) have redefined the dimensions of learning and development. Championed by the Association of American Colleges and Universities and others, a broad educational movement has emerged around what could be called the Quality Agenda, highlighting the importance of pedagogies and high-impact practices that engage students as active learners, constructing knowledge and understanding and developing as complex thinkers who connect learning within and beyond the classroom to address new challenges in education, career, personal, and community life. C2L findings suggest that ePortfolios can play a major role in helping colleges and universities address not only Completion but also the Quality Agenda, advancing and supporting higher order thinking and integrative personal growth.

Much analysis remains to be done on the C2L data. Even at this early stage, however, C2L evidence suggests that students engaged with sophisticated ePortfolio pedagogies are more likely to engage in higher-order thinking, integrative learning, and other high impact learning behaviors. These findings suggest that, by helping students to deepen and integrate their learning, sophisticated ePortfolio initiatives can help institutions address the Completion Agenda and Quality agendas.

Proposition #3

ePortfolio Initiatives Catalyze Learning-Centered Institutional Change

Focusing attention on student learning and prompting connection and cooperation across departments and divisions, ePortfolio initiatives can catalyze campus cultural and structural change, helping the institution move towards becoming a learning organization.

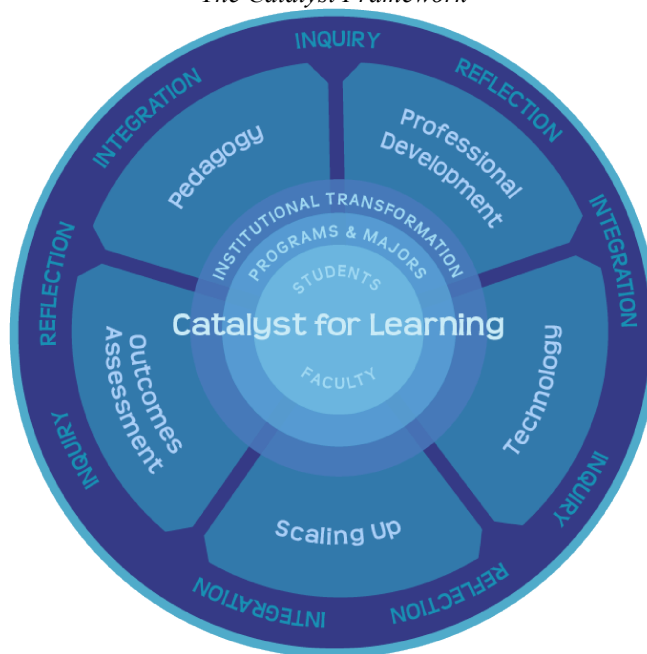
C2L’s findings show that reflective, integrative, and social pedagogies are key to improving student learning, engagement, and success. Yet we also found that on most C2L campuses, the work of ePortfolio innovators extends beyond pedagogy. Working with faculty, staff, departments, and centers, C2L teams have addressed institutional structure and culture from multiple angles. C2L research suggests that effective ePortfolio initiatives build vibrant programs with work in five interlocking sectors:

- Integrative social pedagogy: As discussed above, the theory and practice that guides the use of ePortfolio to support and deepen student learning;
- Professional development: The active processes (e.g., workshops, seminars) that help faculty and staff learn about ePortfolio technology and pedagogy;
- Outcomes assessment: The use of ePortfolio and authentic classroom work to support holistic assessment of programs and General Education outcomes;
- Technology: The choices campuses make about ePortfolio platforms and related support mechanisms;
- Scaling up: Planning, Building and Evaluating an ePortfolio Initiative: The active work by campus ePortfolio leaders with students, faculty, departments, administrators, and other stakeholders to build their initiatives.

Actively addressing all five sectors of what C2L labels the Catalyst Framework (see Figure 5) is a demanding task for ePortfolio teams. But it has a payoff. We find that campus teams that work effectively across the Framework build more robust and sustainable ePortfolio initiatives. The ability of campus ePortfolio leaders to organize meaningful professional development, for example, shapes the curricular and cultural context for broad enhancement of student learning. Effectively engaging faculty, departments and college stakeholders is key to attracting the support needed to sustain an ePortfolio initiative. Moreover, there is a bonus. Because an integrative ePortfolio initiative requires collaboration across multiple sectors of the campus, it has the potential to engage diverse campus groups, who may otherwise rarely connect, in a shared conversation about student learning. Coordinated and cohesive ePortfolio projects have the capacity to advance an integrated learning culture and catalyze institutional change.

If C2L’s first and second propositions address, respectively, the Completion and Quality agendas, the third proposition speaks to what could be called the Change agenda. While the Completion and Quality

Figure 5
The Catalyst Framework



agendas are well known, this third agenda for higher education is perhaps equally important. How can colleges and universities build their capacity to respond and adapt to changing conditions and new possibilities? How can they thoughtfully engage faculty and staff expertise to advance institution-wide innovation that is focused on student learning? How can they build learning cultures and become more integrated and adaptive learning organizations? C2L's findings suggest that ePortfolio initiatives have the potential to help colleges and universities address these increasingly pressing needs.

This third proposition is qualitatively different than the first two—both more sweeping and more difficult to assess. Our work around it is at a more formative stage, and the evidence is more complex. The evidence for this proposition derives primarily from the practices shared by C2L teams who have documented their work in each sector of the Framework and described how it contributed to their campus initiative. This self-report data does not support hard and fast conclusions, but it is fascinating and meaningful; and, even at this early phase, we believe it deserves careful consideration.

Professional Development

Much could be said about the strategies employed by C2L campuses in each sector. In this article, we can do only a brief review. Having discussed pedagogy above in Proposition 2, we will start here with professional development.

C2L findings suggest that the most vibrant ePortfolio campuses paid sustained attention to professional development. Faculty development was instrumental to ensuring the quality of ePortfolio practice and to helping faculty explore, test, and adapt integrative, social ePortfolio pedagogy for the needs of their disciplines and courses. C2L teams used a range of professional development structures, including workshops, sustained seminars, summer institutes, and on-line tutorials. Across diverse structures, their processes sought to engage faculty in an inquiry into learning and teaching and to encourage reflective practice. Salt Lake Community College (2014b) described a relatively typical approach, which helped faculty prepare to teach with ePortfolio and reflect on the experience:

At SLCC, we take a “rooted in community” approach to our faculty and staff professional development on ePortfolios by fostering intensive conversations and collaboration across the curriculum. Now, we have collaborative “Boot Camps,” in which faculty and staff from diverse disciplines spend a day working together to reshape the ways that they use ePortfolios in their classrooms . . . Members of the cohort share draft assignments and reflection prompts with the group, and receive feedback from their colleagues as well as from the cohort leader. This fall we had support cohort members build their own ePortfolios and design course pages to share with students. The

purpose of this was to help faculty walk the talk with their students. (para. 1-2)

Critical to advancing effective ePortfolio practice, effective professional development can also have a broader impact. Working with student ePortfolios can transform the impact of professional development. C2L leaders often develop activities that ask faculty to collectively examine examples of student work related to particular pedagogical innovations. Doing so through ePortfolio can help deepen a professional development conversation, moving it from a focus on what teachers do to what students do, from a teaching-focused conversation to one that focuses on student learning—and on the complex, reciprocal relationship of learning and teaching. C2L leaders from the University of Delaware (2014b) reported that having faculty collectively examine student work in an ePortfolio context was a powerful experience:

Faculty observed that they gained new insights into the way students interpreted and completed assignments. They also reported being able to more comprehensively gauge students' knowledge acquisition based upon reading students' written reflections in addition to reviewing the students' work. They in turn used this obtained knowledge to adjust their curricula accordingly. (para. 3)

Similarly, at San Francisco State University (2014), the C2L team noted:

The use of the ePortfolio has aided curriculum development across departments and has allowed us to move from a more faculty-centered approach to a more student-centered one where we analyze what they are learning specifically. It has also helped us have conversations in developing pedagogical strategies as well as a more in-depth look at assignments and how they can be modified to reach the desired outcome. (para. 2)

In students' ePortfolios, faculty can view not only student work, but also student reflections on that work. Also, they can set that work in a richer context. If students are building an ePortfolio across courses and semesters, faculty can compare the work done in current courses to work done earlier or in different disciplines. They can consider the learning that takes place in co-curricular and off-campus experiences. In this context, the inquiry shifts from the individual faculty or course to programs, departments, and to interdisciplinary (and inter-divisional) discourse. Examining student learning that crosses traditional boundaries can catalyze a broader conversation about learning and pedagogy,

going beyond courses and credits to focus on students and student learning.

The C2L team from Manhattanville College (2014a), for example, has brought together faculty and staff from traditional departments (e.g., English, psychology and Fine Arts) with leaders of the Center for Career Development, the Athletics Department, undergraduate research initiatives, and others. The open and integrated nature of the process, they suggested, deepened and changed its impact:

In all of our professional development programs, we actively recruit faculty and staff from across the disciplinary and programmatic spectrum. We work hard to disrupt "one size fits all" conceptions of ePortfolio by asking these diverse groups to collaboratively investigate the ways in which ePortfolios can meet their individual and collective goals for teaching, learning, programming and professionalism. In this way, ePortfolio professional development has become a catalyst for bringing faculty and staff who perform vastly different functions across our campus together to build an understanding of ePortfolio as a . . . way of thinking that can serve a complex web of interconnected goals and objectives. (Manhattanville College, 2014b, para. 12-13)

ePortfolios bring diverse student work together in ways that ask students to relate different dimensions of their learning. Often conferring a different sense of audience from what drives conventional coursework, ePortfolios ask students to relate the parts of their learning to the construct of a larger whole. Integrative ePortfolios make student learning visible in ways that are contextualized and personalized, conferring significance on choices and intentionality on consequences. Placing ePortfolios at the center of sustained and creative professional development processes has the potential to not only build ePortfolio initiatives and advance sophisticated pedagogy, but also change and deepen the campus conversation about teaching and learning.

Outcomes Assessment

Outcomes assessment is a crucial and demanding area of work for many ePortfolio initiatives, including those in the C2L network. A new study (Kuh, Jankowski, Ikenberry, & Kinzie, 2014) showed that, as pressure for accountability mounts and a growing number of educators come to understand the value of meaningful outcomes assessment, the number of campuses using ePortfolio for program review and assessment of General Education was exploding—more

than tripling between 2009 and 2013. On some campuses, institutional support for ePortfolio is primarily based on its use for outcomes assessment. C2L campus teams invested considerable energy in working with a range of faculty and other stakeholders to support meaningful outcomes assessment.

While challenging, the linkage between ePortfolio and outcomes assessment is crucial in broadening ePortfolio's impact and encouraging systemic thinking about student learning. Building outcomes assessment around ePortfolio can ground the process in student learning artifacts. In contrast to standardized national examinations, ePortfolio-based approaches link assessment to the authentic work of students and faculty. This connection creates opportunities to move beyond assessment OF learning and move towards assessment FOR learning—student learning, professional learning, and institutional learning (Penny Light, Chen, & Ittelson, 2011). Many C2L campuses are making progress in this regard.

The C2L campuses most advanced in assessment engage faculty in an inquiry process that uses ePortfolio-generated student artifacts to connect assessment to everyday classroom learning and teaching. At Boston University (2014b), “the assessment committee in charge of this project, made up of 11 faculty members, met once a month for a year to assess student ePortfolios as a group” (para. 5). Each summer, this team lead a broad faculty group in assessing 100 student ePortfolios. In the Nursing program at Three Rivers Community College (2014b), “ePortfolio [were] reviewed through rubrics, attainment of program outcomes, and qualitative statement analysis” (para. 4). Individual students’ portfolios provided the data, which was then reviewed and discussed during the College’s faculty retreats.

At IUPUI (2014b), assessment of student learning outcomes was conceptualized as “a faculty-led inquiry into student learning” (para. 13). A key value that ePortfolios add to common practice, according to IUPUI (2014b) leaders, is that they “support[ed] nuanced understandings of strengths and areas for improvement” (para. 13). Similarly, in the assessment process at LaGuardia Community College (2014b), faculty asked the questions, “what do we want students to learn, why, and how can we measure that learning?” (para. 8). The philosophy for outcomes assessment is one of “‘appreciative inquiry’ that asks the questions: ‘What do you do well? What can you do better?’” (Polnariev, 2014, para. 15).

Leaders at LaGuardia and at Guttman Community College have linked inquiry-based assessment with discussion of curriculum change. Guttman Community College (2014b) explained:

Guttman’s two main outcomes assessment structures – Assessment Days and GLO Teams – incorporate the design principles of inquiry, reflection and integration. These principles allow us to focus on assessment for learning and improvement across the college, keeping student learning visible at each phase of our work. Our Assessment Days provide the community ample opportunities to use ePortfolio-based outcomes assessment as a point of inquiry for asking the larger questions about how the integrated curriculum is impacting student learning. (para.20-21)

Using ePortfolios to put faculty-guided student learning at the center of an outcomes assessment structure makes it easier for faculty to reflect on assessment findings and make connections to their own everyday practice. In this way, ePortfolio can facilitate “closing the loop.” Implementing changes in curriculum and practice is widely understood to be one of the biggest challenges in the outcomes assessment field (Banta & Kuh, 1998). In a widely cited study of closing the loop, Trudy Banta (Banta, Jones, & Black, 2009) found that only 6% of campuses nationwide actually used assessment evidence of student learning to design and implement change. Using ePortfolio to support assessment can help campuses meet this challenge and make assessment more meaningful.

On some C2L campuses, linking ePortfolio-based outcomes assessment to reflective professional development facilitates closing the loop. LaGuardia offered professional development mini-grants, supporting the implementation of faculty recommendations emerging from the Periodic Program Review. Guttman Community College had mid- and end-of-semester Assessment Days built into their calendar. These days, they reported, are used for assessment-related professional development, guiding faculty and staff through a systematic, collaborative reflection process focused on institutional learning:

Through an intentional focus on student learning, the college is developing a culture of evidence and assessment that drives individual, team, unit and institutional growth and change . . . In our inaugural year, reflection was largely centered on anticipated outcomes. This type of calculated anticipation led to several changes between the fall and spring semesters and in preparations for the incoming class of freshmen for fall 2013 . . . As we celebrate our first graduating class in spring 2014, our reflections will naturally shift to questions related to the ways Guttman prepared students for success at four-year colleges and in careers. (Guttman Community College, 2014b, para. 21-22)

C2L leaders at Northeastern University (2014a) described a similar process, in which education faculty built ePortfolio into assessment and engaged in a deep process of inquiry and reflection. This led them to redesign their curriculum to better achieve their goals. Now, they reported on the site and in a recent article (Matthews-DeNatale, 2014), noted that each course had designated a signature assignment, each one progressively different—what they described as variation within continuity. These added up to a fully integrated curriculum:

The first three to four courses in each concentration have been co-designed by faculty as an integrated suite that takes students through a “cognitive apprenticeship” in the skills, understandings, and capabilities of professionals within the field. They are designed to foster connected learning, in which each course builds upon and complements the next, and the faculty have a clear understanding of how “their” courses intersect with and reinforce other courses in the program. (Matthews-DeNatale, 2014, p. 10)

C2L campus leaders realize that in order for their institutions to become true learning colleges, outcomes assessment must involve inquiry into authentic student work, connected to real classroom activity. Reflecting on ePortfolios and student work, faculty and staff can more easily identify realistic recommendations and integrate changes into curriculum and pedagogy. An ePortfolio-based cycle of inquiry, reflection, and integration helps faculty and institutions close the loop with changes that improve student learning. Moreover, such a process can spur a larger conversation about student learning. Building assessment processes so that they engage faculty and staff in sustained and structured inquiry into student learning can play an important role in helping an entire institution become more of a “learning college,” a place where everyone is focused on learning and changing, a place where the college itself is a learner, continuously learning how to deepen and advance student learning in every aspect of its practice.

Technology

Each sector of the Catalyst Framework is important, but they are important in different ways and play different roles in shaping a campus ePortfolio initiative. The technology sector is important to the extent that ePortfolio technology supports and enhances integrative student learning and links it to professional development and outcomes assessment. Those less familiar with ePortfolio often consider it primarily a platform or application. More experienced practitioners

know that pedagogy drives technology and that ePortfolio is more of a process, a way of teaching and learning. Accepting the importance of pedagogy and process, it is important to note that technology plays a role in that equation. ePortfolio technology has the potential to support change by facilitating a campuswide focus on pedagogy and student learning.

If sophisticated ePortfolio pedagogy asks students to document, reflect on, and integrate their learning, the most effective ePortfolio technology supports this process, helping students to: (a) connect different elements of their learning, bringing together curricular, co-curricular and experiential learning; and (b) share their contextualized learning with students, faculty, and other authentic audiences. Moreover, effective ePortfolio platforms also help faculty, staff, and other stakeholders connect to and focus on student learning. Facilitating the integration of artifacts into both professional development and outcomes assessment processes, quality ePortfolio platforms help deepen faculty, staff, and institutional learning.

On C2L campuses where ePortfolio initiatives are thriving, these complex goals guide the selection and management of an ePortfolio platform, bringing stakeholders from across institutional sectors together for a collective conversation about learning. For example, ePortfolio leaders at Pace University (2014b)

formed an ePortfolio advisory board and under the guidance of our CIO, created a “bucket list” of what we wanted our ePortfolio tool to do and look like . . . The advisory board consisted of about 25 faculty and staff from across the institution . . . To sum up the selection process, the pedagogy came before the technology. We determined our needs first and then selected Mahara based on that, and that was critical. (para. 13)

ePortfolio technology that facilitates a focus on pedagogy allows faculty and staff to easily examine student work in a more holistic context, supporting learning about and the improvement of pedagogy. As C2L’s Matthews-Denatale (2013) explained about Northeastern University’s (2014b) program, “when positioned properly within a conversation about pedagogy, ‘ePortfolio as tool’ can expand the dialogue about teaching and learning . . . the conversation shifts from ‘learning within courses’ to ‘learning across courses’” (para. 32).

An effective ePortfolio technology can help deepen faculty, staff, and institutional learning by facilitating professional development and outcomes assessment processes on a campus. Moreover, an ePortfolio platform has the potential to support the scaling and growth of ePortfolio initiatives, enhancing a campus’s ability to make student learning visible across an entire

institution and catalyzing institutional learning and change.

Scaling Up

To build a successful ePortfolio initiative, C2L teams develop reflective social pedagogies, manage new technologies, and lead professional development and outcomes assessment processes. They also attend to a range of other tasks, issues, and processes that build campus engagement and institutional support—what C2L terms Scaling Up. By scaling up, we mean the strategies and approaches by which ePortfolio projects begin within small segments of an institution and then expand, as additional faculty and programs begin to work with ePortfolio. These tasks are instrumentally important, in and of themselves. In bringing together diverse campus constituencies for collaboration focused on student learning, they also create opportunities for deeper systemic change.

In “Disrupting Ourselves: The Problem of Learning in Higher Education,” Randy Bass (2012) argued that “students will learn to integrate deeply and meaningfully only insofar as we design a curriculum that cultivates that; and designing such a curriculum requires that we similarly plan, strategize, and execute integratively across the boundaries within our institutions” (p. 32). The process of developing an effective ePortfolio initiative, Bass has gone on to suggest, both requires and facilitates this integrative process:

ePortfolio increasingly serves as a network of connections—among students and faculty, and programs and majors, and integrating with institutional initiatives, such as General Education, outcomes assessment, and high-impact practices . . . [ePortfolio initiatives] provide a context for bringing together stakeholders from across boundaries, creating a network of connections that respond to the ecosystemic nature of institutions. By their integrative nature, ePortfolio initiatives foster collaborations across silos, connecting faculty, academic staff, student affairs professionals, advising, writing centers, technologists, librarians, employers, alumni, internship coordinators, community partners, and many more. (Bass, 2014a, p. 1-2)

Reviewing campus practices, C2L identified ten core strategies teams use to scale their initiatives. A partial list of these demanding, recursive tasks includes: engaging institutional leaders to help them understand ePortfolio’s value; securing internal and external funding; managing meaningful evaluation processes; building alliances with departments and programs; linking to High Impact Practices; and building a campus-wide ePortfolio culture. Northeastern

University’s (2014b) team, for example, described the strategic value of building alliances with key programs in building the campus initiative. They have established strong relationships with the undergraduate Writing Program, the Honors Program, and the Graduate School of Education. They explained their approach in their Scaling Up story:

When a school elects to institute ePortfolios program-wide, the initiative is more likely to succeed during times of change and wavering support. Once one program has an ePortfolio requirement, and the system of support is put into place, it becomes easier for other programs to adapt the innovator’s materials and systems for their own purposes. Diffusion of Innovations Theory predicts that successful programs in one area of an institution will breed similar programs within other areas of the institution. (Northeastern University, 2014b, para. 31)

The Northeastern University story highlights qualities that they believe advanced the Scaling process—vibrancy, stamina, and interpersonal relationship-building. They stressed the need for both bottom-up and top-down support. “Scale,” they wrote, “springs forth from growth within the hearts and minds of many people within an organization, from intrinsic motivation and consensus that change will be beneficial. Scale is a manifestation of organizational learning” (Northeastern University, 2014b, para. 3).

Scaling up and the work that campus teams do around pedagogy, technology, professional development, and outcomes assessment together demand sustained and intentional work. These efforts prompt teams to build partnerships and facilitate collaboration, bringing together faculty from diverse disciplines, advisors and co-curricular staff, IT staff and professional development facilitators, and executives from multiple divisions. The C2L team at Pace University (2014c) addressed the need to bring these groups together with an Advisory Board that encompassed “members from each of our academic areas and also the Library, Information Technology Services, Center for Teaching Learning and Technology, Office of Students Success, and Assessment Office” (para. 22). For the Pace team, this was part of a broader change effort:

One of our major goals has been to have ePortfolios permeate our Pace culture . . . Integrating learning and making connections have been our mantras . . . We have built partnerships with faculty, staff, and administrators from all schools, many disciplines, as well as Student Life, Office of Assessment, and Career Services . . . ePortfolios have been used by Student Life on one

campus as part of a new Leadership Certificate Program; students in the program—first year and second year students, and their upper class mentors, used the ePortfolio to document and reflect on their activities, workshops, and leadership development . . . We are also using ePortfolios for Tenure and Promotion review, which has been helpful in getting faculty experienced with the platform. (Pace University, 2014c, para. 4-8)

Our most successful C2L campus teams facilitate connection and collaboration across the institution, encouraging systemic conversations about student learning. Such sustained efforts to building an ePortfolio culture are critical to the ability to broaden and deepen ePortfolio initiatives. But such effort also yields dividends. The conversations and collaborations required for ePortfolio success can help to illuminate the holistic nature of the student learning experience, sparking structural change and building campus-wide commitment to learning-centered activities and processes.

Growing commitment to a learning culture and related changes in institutional structure and culture are evident on campuses across the C2L network, taking different forms on different campuses. As described earlier, in the Education School at Northeastern University (2014a), ePortfolio-based assessment is leading to visionary curriculum change focused on integrative learning. At Manhattanville College (2104b), the ePortfolio team initiated sustained professional development, “the first on our campus after a long period of no professional development” (para. 19). The power of the ePortfolio-based process sparked faculty interest in new opportunities for inquiry into teaching and learning. And this in turn led to administrative support. The College recently created a new campus-wide Center for Teaching and Learning, responsible for ePortfolio and broader pedagogical support.

At San Francisco State University (2014), the success of the integrative Metro Health Academies and the work of the ePortfolio team encouraged SFSU to rethink the way it supported entering students. Beginning in Fall 2013, an ePortfolio-based learning community approach was being expanded to serve 40% of the incoming student population. The Provost of Boston University (2014a) recently highlighted the ePortfolio initiative of the College of General Studies as an assessment model for other BU Colleges. Similarly, at Three Rivers Community College (2014a), the success of the ePortfolio effort in Nursing led the College to expand the use of ePortfolio and initiate a more powerful and authentic learning-centered assessment process for the campus as a whole.

At LaGuardia Community College (2014a), the ePortfolio effort has long advanced the importance of integrative learning, addressing the whole student. In 2012 LaGuardia Community College announced a sweeping institutional change effort reflecting a similar perspective, aligning student affairs and academic affairs, rethinking advisement, and rebuilding the First Year Experience. ePortfolio’s capacity to highlight holistic learning, support educational planning and identity development, and link curricular and co-curricular experiences can help create bridges between academic and student affairs. These two areas are now collaborating with academic departments to launch a new, discipline-based, credit-bearing First Year Seminar, incorporating ePortfolio as a required and central element.

Observing campus developments across our network, particularly those related to scaling up processes, we see that the growth of an ePortfolio initiative both requires and spurs broader changes in institutional culture and structure. In “Scaling Strategies and ePortfolio as a Catalyst for Change,” Bass (2014a) argued that ePortfolio initiatives have grown and deepened most successfully when they have aligned themselves with efforts to build a campus-wide culture of learning. Bass (2014a) suggested that integrative ePortfolio initiatives can serve as a catalyst for positive change, and highlighted three layers or dimensions of such a change:

- The shift to a student-organized view of learning, bridging curriculum and co-curriculum, where learners pull from knowledge resources and offerings to construct an increasingly customized educational experience that is both professionally productive and personally meaningful;
- The development of an institutional conversation on student learning, moving towards a learning-centered culture and structure;
- A shift in decision-making, investment, and allocation of resources and energy that encourages the institution to be responsive to high-impact learning.

While the C2L evidence is preliminary, it suggests that ePortfolios promote learning-centered connection, making student learning visible to faculty and staff across institutional boundaries. Requiring and facilitating collaboration across disciplines and departments, ePortfolio initiatives can help to break down traditional institutional silos. Supporting a richer, more holistic view of learning, encouraging a learning-centered institutional conversation, and catalyzing broad institutional change in structure and culture,

ePortfolios can help colleges become more adaptive learning organizations.

Conclusion

We live and work in a time of straitened budgets and heightened pressures on higher education. To survive and thrive in this demanding, high stakes context, ePortfolio innovators must develop new capacities. As a field, we must identify, share, and deploy effective strategies for growing and deepening our initiatives. We must also strengthen our ability to articulate persuasively the value and importance of our work for students, faculty, and institutions. In its work with 24 leading ePortfolio campuses, the C2L project represents a significant commitment to this effort.

We believe that ePortfolio has the potential to play a vital role in the evolution of higher education. But the future of the ePortfolio field depends on our collective ability to gather, analyze, and share evidence of the difference ePortfolio initiatives can make. C2L has analyzed an array of evidence that supports three propositions discussed in this article: we find that integrative ePortfolio initiatives can build student success, deepen student learning, and catalyze institutional change. These findings can add significantly to our collective understanding of the power of integrative ePortfolio practice. They underscore the value of thoughtful investment in the development of sustained and sophisticated ePortfolio initiatives, engaged in collaborative communities of practice and exchange. Moreover, they suggest a host of promising avenues for further research, analysis, and theory building. With this in mind, we offer these propositions for broad consideration, testing, refinement, and improvement. As a field, we believe, our shared engagement in this process will shape our capacity to advance a brighter future for students and colleges nationwide.

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