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Commentary

Book Review

ePerformance: Crafting, Rehearsing, and Presenting the ePortfolio Persona

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"ePerformance: Crafting, Rehearsing, and Presenting the ePortfolio Persona" exposes vital intersections between pedagogy and performance to reveal how using ePortfolio encourages not only student-centered learning, but facilitates collaboration through cooperative exchanges. Productive interactivity with audiences who actively influence process, content, and outcomes displaces classroom hierarchies and the passive absorption of predetermined material. It is the powerful intersection of multiple modes of performance that establishes the ePortfolio medium as an elastic, ultra-accessible theatrical arena in which students may create, rehearse, and present themselves. By recognizing that they are not only at the center of learning, but that they are one of multiple centers in a multicentric teaching and learning dynamic, students activate the discourse of which their work is already a part.

Who am I anyway? Am I my résumé?
-A Chorus Line

This essay engages the field of performance theory along with the scholarship of teaching and learning in order to investigate how students use ePortfolio to craft, rehearse, and present themselves through interactions with various audiences. Subheadings below introduce categories common to both theatres and classrooms in order to best explore the overlay between disciplines. Exposing intersections between pedagogy and performance reveals how using ePortfolio can enhance the ways in which students already perform in school and in everyday life. ePerformance encourages not only student-centered learning, but facilitates collaboration through cooperative exchanges, destroying classroom hierarchies by introducing a multicentric teaching and learning dynamic.

Gauging Performance

As Jon McKenzie points out in his turn-of-the-millennium book *Perform or Else*, "performance" remains a "heavily contested concept" whose definition depends highly upon the context in which it is used. We might speak, for example, of an actor's or dancer's performance when referring to a play or a ballet; of a student's or employee's performance while evaluating an individual's work-based output; or of a machine's or software program's performance in determining how well a piece of technology functions. Inside this broad-based, 21st century definition, everyone—and everything—performs.

The electronic portfolio exists as digital technology (which performs) as well as a vehicle for evaluating an individual's work (performance). The ePortfolio also has an inherent ability to function as a performance space, a kind of theatre in which the self is both rehearsed and presented to an audience. In fact, the multiple modes of "performance" listed above, and nearly every other possible manifestation of performance, articulate to a corresponding multitude of ePortfolio functions, including, but certainly not limited to, its assessment, showcase, and archival capabilities.

Electronic performance shares a great deal in common with live theatrical performance; it even possesses the potential for real-time exchanges. "ePerformance," however, is already an everyday phenomenon beyond the idea of an electronically-staged event. Theorist Steve Dixon recognizes the ubiquity of "digital performances" in everyday life—conducted via blogs, chatrooms, electronic social networks and other interchanges—noting a parallel to Erving Goffman's seminal social-psychology text *The Presentation of Self in Everyday Life* (1953). Dixon brings into technological play Goffman's notions of performative presentations of the self, with the subject being progressively erased, redefined, and reinscribed as a persona/performer within the proscenium arch of the computer monitor. Personas are honed like characters for the new theatrical confessional box, where, like postmodern performance artists, individuals explore their autobiographies and enact intimate dialogues with their inner selves (2007, p. 3-4). Reflecting, rehearsing, and presenting the self through the ePortfolio medium requires one distinctive element crucial to performance: audience.

Audience

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. Audience and actor may also be one-in-the-same, as Goffman put it, "performer and observer

Figure 1
Critical Distance: Performer as Observer

Figure 1: Students record a rehearsal of a colleague's oral presentation in front of a live audience of peers (left), which is then uploaded for reflection on the student's ePortfolio (right). The video prompts self-reflection and is also open to receive tags, comments, and embedded survey evaluations by others. The student may solicit and contemplate feedback before adjusting his performance for a second recording. He may also track his development as a speaker by comparing his different class presentations over time.

of the same show" (1953, p. 80-81). In his examination of social interactions in a pre-digital world, Goffman insists that behavior may be adjusted in private rehearsals of the self where "an individual may be his own audience or may imagine an audience to be present" (p. 81-82).   A student soloing on ePortfolio's virtual stage performs in part or exclusively for the self, as a way of conducting private metacognition. The student may regard his or her self-as-audience by using the digital space to assemble and manipulate what s/he does and is to examine and experiment with a self-authored persona. In this kind of auto-performance, the student constructs, tests, and revises the self for re-presentation to him/herself or to others.

The meta-reflective process of crafting, rehearsing, and presenting an ePortfolio persona requires the student to project the self into a digital environment through representative words, visuals, media, links, etc., thereby necessitating a certain degree of self-estrangement.   When creating an ePortfolio, the student must continually step back to maintain sufficient critical distance in order to best reflect on him/herself and his/her evidence of learning. This reflective strategy relates to a foundational tenet of Bertolt Brecht's instructive epic theatre as expressed in his "Theatre for Pleasure or Theatre for Instruction." Brecht calls for a critical detachment on the part of the actors and the audience in relationship to their investment in the characters and action, emphasizing, "alienation is necessary for all understanding" (Willet, 1964, p. 71). The ePortfolio medium accomplishes this by allowing one to see

oneself performing.   As Bret Eynon has quoted one student, ePortfolio "helped me see a new me" (2009). Using ePortfolio allows students to perform while simultaneously reflecting upon that performance. This meta-reflective distanciation makes possible broad integrations, like the association of work from courses completed over time, as well as periodic self-reflections, as in the case of archiving and assessing one's own in-class presentations (See Figure 1).

Brecht's 1959 vision of the epic stage incorporates multimedia teaching and learning practices to a profound degree, anticipating many of the challenges currently posed by digital stages like ePortfolios. He envisioned "big screens recalling other simultaneous events elsewhere…projecting documents which confirmed or contradicted what the characters said…concrete and intelligible figures to accompany abstract conversations…figures and sentences to support mimed transactions whose sense was unclear…" (1964, p. 71).   Such techniques for rendering intangible encounters and perceptions visible through multimedia stagecraft is particularly relevant in the case of the student who must furnish evidence of the abstract concept of "learning" and to reflect upon it critically. ePortfolio affords the 21st century student a wealth of tools to articulate his/her experiences. Many ePortfolio platforms allow users to incorporate a variety of text, portable documents, images, video, hyperlinks, comment boxes, and web-based sharing tools. Through the ePortfolio medium, a virtual yet hyper-visible, process of self-reflection and presentation may take place.

Sharing, linking, and publicizing ePortfolios realizes the abstract "audience" that students, previously, have only been able to imagine. By preparing to present themselves and their work to potential viewers, students can consider their research and writing in the context of something to be experienced by others. Bret Eynon relates one student's insight of how publishing her ePortfolio sensitized her to a "broader audience." Eynon concludes:

"[t]he situated quality of the learning, its connection to an audience, reinforced its embodied quality…and the fact that Angelica's learning connected to her sense of herself, made it all the more important that she think carefully about her audience and what she wanted them to learn…" (2009).

Such hyperawareness results in raised stakes, motivating higher quality performance because the work stands to be viewed, evaluated, used, and even cited. The "audience" that professors have been encouraging students to consider through their writing and other projects has finally materialized; it is no longer a hypothetical notion within restricted transactions between students and teachers. The virtually unlimited potential for ePortfolio compositions to engage multimedia and promote interactivity brings to light the discourse that writing and performance (in all academic disciplines) has always been.

Setting the Stage

Digitized artifacts may be assembled into the virtual environment much the same way that a theatrical setting might be constructed, costumes built, or properties introduced. One may behave simultaneously as director, actor, spectator, and scenographer, manipulating the scene according to one's personal dramaturgy, powerfully self-producing. Bernie Cook has observed that "[u]ser-generated digital audiovisual content is a signature aspect of Web 2.0." arguing that this "explosion of amateur digital media production has significant implications for teaching and learning" (2009). The ability to "self-produce" through ePortfolio places the student at the center of the learning experience, enabling him to literally operate the controls of his/her own inquiry-based encounters.

Gabriella Giannachi insists that a virtual medium "acts as a theatre" by behaving as a laboratory-like stand-in for reality. She argues that a virtual realm is not antithetical to the real, but rather "a perfect rehearsal space for it…it is both the practice of the real and its theatre….not only a rehearsal space and a theatre, but an archive, a place of memory, a repository for humankind's past, present and future plans, activities, dreams and failures" (2004, p. 151). Giannachi's description of virtual performance spaces is closely aligned to ePortfolio capabilities, but much of

ePortfolio's power lies in its ability to truly function both as a rehearsal and a presentation space, a studio for works-in-process and a slate for goal-planning as well as an exhibition space. Students benefit from the fluid and rapid ease with which they may rehearse and present themselves in the same environment.

ePortfolio may also extend the student's learning experience in a way that renders visible what may not already be apparent. That is, ePortfolio, by necessitating an arena in which the author must continually "set the scene" with evidence of his/her learning facilitates a process of making learning visible. If nothing is deposited or created within the ePortfolio environment, nothing is there, and thus there can be no confirmation of knowledge, no auto-reflection, or any presentation of the self to others. The stage may remain uncomfortably vacant for students and instructors in disciplines not traditionally accustomed to collecting visible evidence of learning. The traditional paper-portfolio medium is already familiar to students and teachers of many creative arts in which learners are guided through a process of constructing and reflecting upon artifacts, or what Helen Chen terms folio thinking (see Chen, 2009, p. 31). Most common are the visual artist's portfolio, the writer's portfolio, and the actor's collection of reels and headshots. For such creative personas, the practice of maintaining a body of work to represent one's range of capabilities and experience is likely standard. In the case where portfolio learning is not already customary in one's discipline, however, the challenge is two-fold: one must integrate folio thinking into the learning experience as well as learn to craft a portfolio electronically.

Running Time

In her analysis of experimental ePortfolio usage, Julie Hughes observes that "ePortfolio seem[s] to expand time," awarding students the rare luxury of time to think, listen, and react (Hughes, 2009, p. 56). Asynchronous interactivity made possible through multimedia ePortfolio exchanges maximizes opportunities for reflection. Whereas in live performance one's cognitions and impulses are confined to parameters established by the dramatic time or real time spent in a theatre/performance space, ePortfolio interactors—including spectators and performers—may each process material at their own speed, with additional time to craft, rehearse, and present meaningful responses. Gertrude Stein has remarked on the anxiety of keeping pace with any live stage play:

"[Y]our emotion concerning that play is always either behind or ahead of the play at which you are looking and to which you are listening. So your emotion as a member of the audience is never

going on at the same time as the action of the play…the fact that your emotional time as an audience is not the same as the emotional time of the play is what makes one endlessly troubled about a play." (Last Operas and Plays xxix)

At last a performance space exists where the audience is free from the temporal constraints of the live theatre experience. Asynchronous interactions via ePortfolio, by virtue of not attempting to conduct a live performance, inspire richer reflections, thus resulting in more informed and influential exchanges.

Interactivity

A proliferation of user-friendly, wiki-based, template-driven ePortfolio platforms continue to invite students with even the most rudimentary technical skills to create digital identities. This hyper-inclusive phenomenon is heightened by every creator's ability to conduct exchanges with an audience. Whether a performer presents alone on a private stage for him/herself or his/her instructor, a limited space for his classmates or peers, or for the World Wide Web, the capability exists to interface with a limitless audience though ePortfolio. In the case of wiki-enabled systems, spectators may tag ePortfolio pages with terms to help classify them for future searchers, as well as begin or continue a comment thread. The creator and/or the audience may also elect to link ePortfolio content to Web 2.0 networks, archives, and sharing tools like Twitter, del.icio.us, Diigo, Facebook, and LinkedIn. ePortfolio's seemingly infinite potential for interactivity is a phenomenon that has just begun to be explored.

The ultra-accessibility of a communal, digital performance space is analogous to what performance theorist Herbert Blau has called the "participation mystique." Different from Lucien Lévy-Brühl's concept by the same name, Blau's participation mystique cites trends in a burgeoning 1960s interactive theatre "where anyone could perform, even the audience, regardless of talent or training" (2002, p. 313). This "mystique" designation points to untapped layers of interactivity; we must first ask ourselves: "What do we mean by participation? To what degree? What type—passive or active?" While current pedagogical innovations have just begun to scratch the surface of what interactive exchanges among peers and with external audiences might be facilitated through the use of ePortfolio, experimental performers have probed these questions for decades. We have only begun to uncover the types of exchanges that might become possible as ePortfolio and interfacing Web 2.0 technologies evolve.

Helen L. Chen notes that a student's productive, curatorial role in constructing an ePortfolio cooperates with "the emergence of Generation C (for content), a consumer trend shifting interest away from passive consumption in order to take advantage of technologies offering creative avenues to create and produce digital content" (Chen, 2009, 32). Initially, students often balk at the sheer creative power ePortfolio affords them, preconditioned by habitual media interactions that give users the sensation they creating while ultimately offering only a shallow level of engagement. David Z. Saltz observes that many "interactive" technology audiences merely wind up behaving as "explorers…they are like tourists…[t]heir objective of attention is the work, not themselves in the work" (1997, p. 121). This is the typical case with everyday Internet navigation; one clicks through a series of pre-programmed options with some sensation s/he is interacting with website content, but without power to manipulate or influence the explored terrain. Such perfunctory modes of interactivity mimic traditional classroom attitudes in which the student merely faces the task of following a lecture or navigating a textbook, without power to influence the ideas presented or effectively synthesize course content in the context of his own goals and experiences. Inspired in part by Brecht's instructional theatre, Blau, in his examination of interactive theatre audiences, emphasizes productive exchanges between actors and observers who are "mutually aware" in an arena where performances belong exclusively to neither (1990, p. 277). The concept dissolves barriers between director/actor/audience in the same way that student-centered learning displaces traditional classroom roles and hierarchies established between teacher/student/peers.

A Multicentric Approach to Teaching and Learning

It is not sufficient to say that the center of learning is merely repositioned so that the focus shifts from the teacher and/or pre-established course content to the student. While ePortfolio usage promotes ways of learning that are student-centered, ePortfolios encourage exchanges to be conducted between multiple centers; learning may be performed between student-to-student, student-to-faculty, faculty-to-student so that no one individual may claim an exclusive authorship of its production. It is this multicentric approach to teaching and learning that distinguishes ePortfolios most sharply from course-centric digital exchange mediums like class websites, course-management systems, or course blogs that demand that students travel toward a static, centralized knowledge base in order to gather knowledge. A multicentric community of learning displaces the notion of any one fundamental center. Instead of students congregating around a deceptive, remote concept of a "course" (rendering them no more

Figure 2
Prosthetic Performances
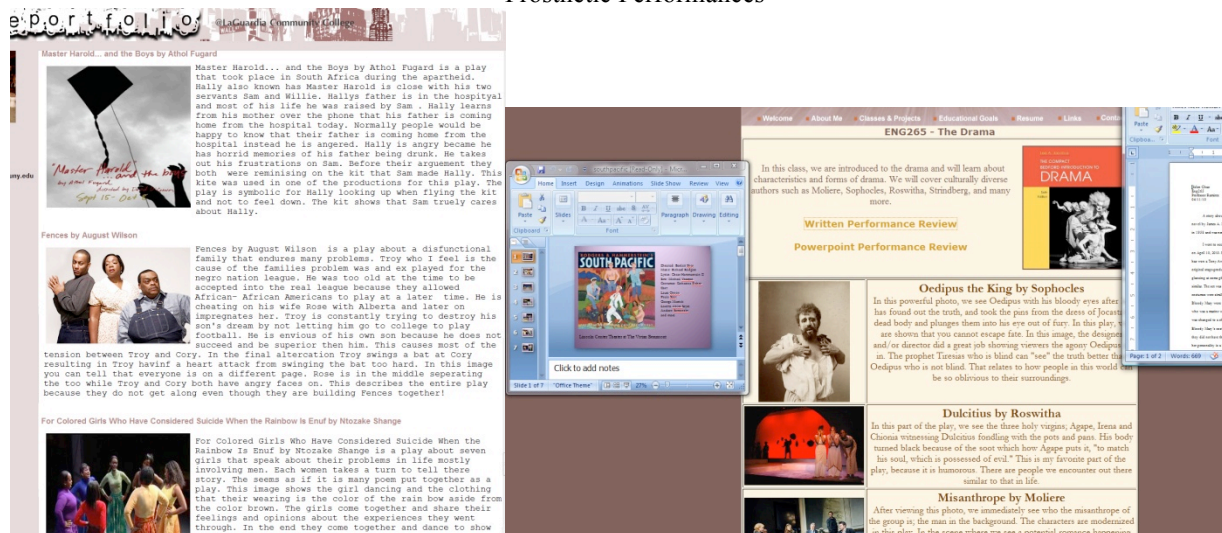
Figure 2: Drama students craft and transmit impressions of theatrical productions they have endeavored to experience "prosthetically." Some entries invite viewers to encounter performances that the ePortfolios' authors have witnessed. Others attempt to reflect on productions mounted decades or centuries ago.

than "explorers/tourists" of knowledge rather than manufacturers of meaning), they conduct productive dialogues from their centers where they actively synthesize course content in the greater context of their larger digital personas. At last the notion of a larger "course" existing independently of its learners may be recognized as illusory.

The benefits and characteristics of a multicentric approach to teaching and learning cooperate with those illustrated by performer Suzanne Lacy and performance art theorist Meiling Cheng for "multicentric performance." Cheng and Lacy describe authors/performers/audience as an arrangement of concentric circles in which participants behave as non-hierarchical co-developers and roles overlap through collaborative exchanges (2002, p. 130-131). A network of ePortfolio learners exists in much the same way; individuals conduct interchanges concentrically, relating while interacting from multiple cores, exchanging and synthesizing information with direct application to the goals and experiences expressed by individual ePortfolios. Faculty may also choose to build ePortfolios; a faculty ePortfolio emphasizes the instructor's role as another sphere in a multicentric learning process, where collaborative exchanges, transactional communication, and co-authorship are fundamental. Faculty eportfolios may also serve as models for student portfolios, offering pragmatic evidence of the practice of lifelong learning.

Cheng also proposes the idea of "prosthetic performance," claiming that a person who experiences images, recorded music, text, artifacts, documentation,

or other residue from a performance could feel even more affected by this virtual encounter than a person who has seen it live—so much that they might even re-imagine the original theatre event as a "prosthetic performance." ePortfolio permits students to transmit first-hand encounters that may then be experienced prosthetically by others. It also allows students to synthesize information in a way that activates a prosthetic connection with learned material. Figure 2 reveals two ePortfolio logs created in a drama course that reflect on archival production photos to "re-produce" historical theatrical performances students have never seen alongside ones that they have experienced first-hand.

Digital "Forum Theatre" and Cooperative Learning

When students operate through a muliticentric teaching and learning dynamic, ePortfolio may be utilized as an interactive forum to imagine different responses and outcomes to conflicts explored in their writing. ePortfolio pages provide a canvas on which to manipulate and explore resources during the initial phase of research. Students may, for example, connect their writing directly to their resources by hyperlinking to electronic texts. My students and I have termed this practice *hypercitation*. By hyperciting sources, juxtaposing texts with images, and digitizing primary materials, each student may generate multimedia portfolio pages that might feature snapshots, videotaped interviews, oral histories, and scanned archival documents. ePortfolio allows students to "stage"

Figure 3
Digital Forums
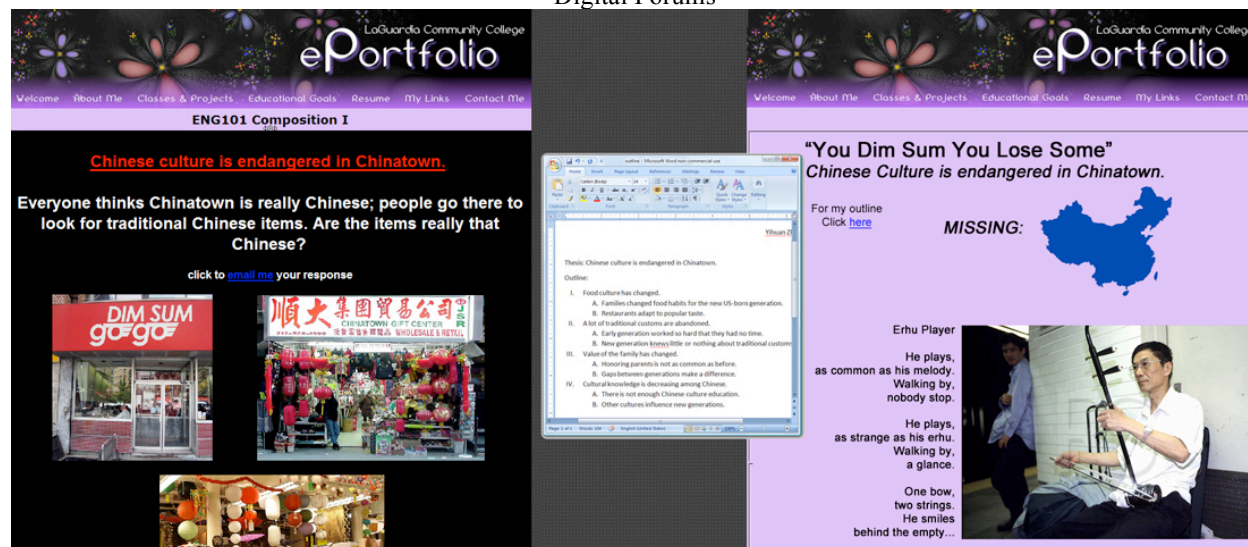
Figure 3: A student poses a research question to her portfolio audience in gathering evidence for a thesis about the preservation of Chinese culture in Manhattan's Chinatown. Respondents effectively served as collaborators as the student crafted an outline and paper title that incorporated others' impressions of the neighborhood in response to her own.

scenes across media, beyond the constraints of the traditional text-based research process. By uniting artifacts they have both located and created into the same environment, students dialogue more confidently with their sources. After an initial analysis of resources is complete, students move forward to craft a thesis question, publishing possibilities as unresolved "plots" for classmates to review. ePortfolio allows students to "rehearse" and "perform" solutions and test how they will be received by a potential "audience." The class-audience responds by creating a digital forum, an electronic cousin of the "forum theatre" that Augusto Boal popularized through his "Theatre of the Oppressed" for social action. Navigators of classmates' ePortfolios behave as simultaneously spectators and actors (or what Boal calls "Spect-Actors"), posting possible "resolutions" for solving each other's research-based plots. Much like Boal's technique, the class-audience is transformed from passive observers into dynamic participants as they perform productive exchanges and comparisons of their writing through this interactive forum.

Signficantly, Boal's *Theatre of the Oppressed* (1979) was inspired by his mentor Paulo Freire's *Pedagogy of the Oppressed* (1968). Friere's pedagogical practice proposed a more cooperative approach to teaching and learning in reaction to what he characterized as "banking" methods of education, in which instructors seek merely to "deposit" knowledge in students. The traditional lecture-to-examination based classroom, for example, requires that students acquire and process information passively, through note-taking, memorization, or regurgitation. Conversely, "through dialogue, the teacher-of-the-students and the students-of-the-teacher cease to exist and a new term emerges: teacher-student with students-teacher. The teacher is no longer merely the-one-who-teaches, but one who is himself taught in dialogue with the students, who in turn while being taught also teach" (Freire, 1968, p. 80). Boal's Spect-Actor poses a dramatic equivalent to Freire's students-teacher, proposing new collaborative audiences of teachers and learners. Passive spectators are liberated, transformed into influential participants with agency to plot and determine courses of action. When students involve themselves in each other's research during the initial stages of composition, a productive dialogue, a discourse, is activated from the beginning, allowing each writer to better anticipate and respond to the audience for which s/he writes. Additionally, students may better reflect on their own writing process after reacting critically to others'. Because ePortfolio interactivity facilitates a community-based learning practice through which intellectual property is shared, students function like Spect-Actors and students-teachers, as co-generators of meaning.

Undergraduates who crave conversations instead of lectures often experience a flat learning curve with peer review conducted via ePortfolio because computer-based social networking is common practice for most "net-geners" or internet-generation students (Barnes, Marateo, & Ferris, 2007, p. 3). When encouraged to conduct digital peer-to-peer exchanges, students seize opportunities to share and circulate methods of learning

Figure 4
Interactive Archives
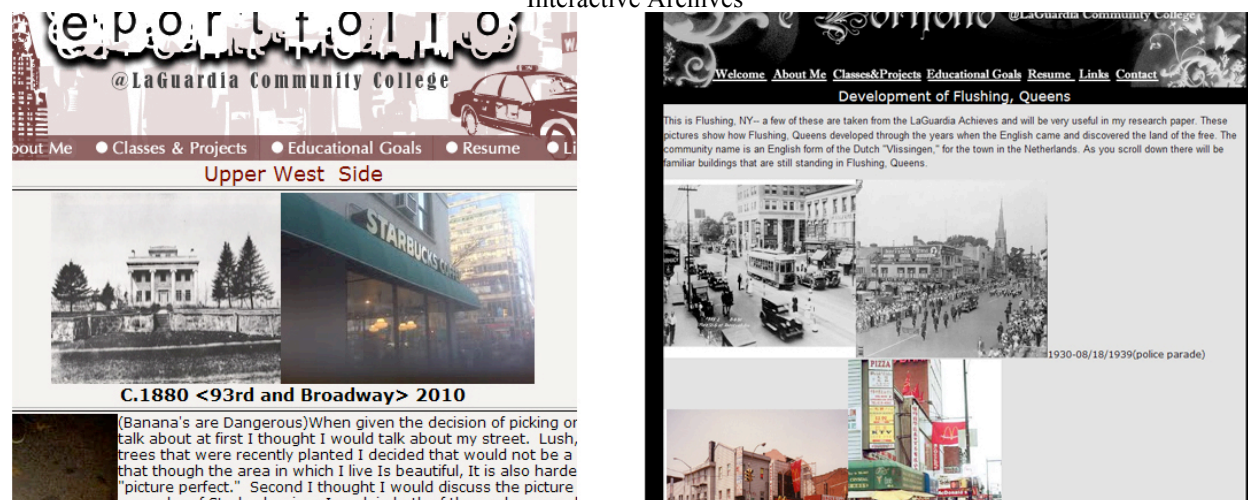
Figure 4: Students juxtapose modern day snapshots of their New York City neighborhoods with archival photographs, contributing to the archive while fostering its development through digital interactions.

that have proved successful for them. For example, one student assembled a multitude of links to archival videos that informed her understanding of class readings and grouped them on her ePortfolio, granting visitors access to a catalogue of historical background information in support of select literary works. Another student developed a gallery of portraits of Latino authors, formulating a "hall-of-fame" and interactive "click-and-name" game for neglected American poets, playwrights, novelists, and short story writers—foregrounding faces that may not be as recognizable as their canonized counterparts. Several students have also posed visual-textual inquiries, juxtaposed in an active, multimedia field enabled for digital exchange, as a strategy for gathering evidence. In Figure 3, a student enrolled in a writing, sociology, and urban studies learning community poses a research question about the preservation of Chinese culture in Manhattan's Chinatown.   The student incorporated audience responses from both inside and outside of the learning community into her own reflections as she moved forward to craft a thesis and outline for her research paper.

The use of ePortfolio in such "learning communities"—or "clusters" of classes taken together by a group of first-year college students—allows for an immediate and obvious synthesis to occur in reflecting on their experienced curriculum.   Once the first semester is complete, students may continue piloting their own connections as they select separate courses and build and follow particular major curriculums. In the case of the writing, sociology, and urban studies cluster, students were responsible for isolating and exploring conflicts relative to their own New York City

neighborhoods. While students were asked to review published and credible resources in developing their research, they are simultaneously recognized as credible sources, since they actively inhabit the neighborhoods they investigate. On their ePortfolios, they furnished links to particular Google Maps, enabling users to explore the territory, and to Social Explorer in citing statistical data related to neighborhood demographics. They uploaded digitized primary materials from the LaGuardia and Wagner Archives, an in-house repository of resources relating to the sociopolitical life of New York City. After locating archival photographs of city street corners and landmarks, they dispatched themselves into their own neighborhoods to photograph the same street corners today while interviewing citizens who can testify to such transformations. By recording and presenting the new evidence they generate on their ePortfolios, they add to existing discourses and archives as active urban observers and sociologists (see Figure 4). The roles they play as "students" are real, so are their social and historical contributions, as are the collaborative audiences to whom they become accessible.

Curtain

It is the powerful intersection of multiple modes of performance that establishes the ePortfolio medium as an elastic, ultra-accessible theatrical arena in which students may create, rehearse, and present themselves. By recognizing that they are not only at the center of learning, but that they are one of many centers, students activate the discourse of which their work is already a part.   A multicentric learning dynamic stimulates

productive interactivity with audiences who actively influence process, content, and outcomes, displacing classroom hierarchies and discouraging the passive absorption of predetermined material. ePerformers dialogue as Spect-Actors, mutually aware, witnessing as their own audience as well as behaving as an audience for others, reacting as students-teachers.

Through collaborative, forum-style exchanges and the incorporation of multimedia such as audiovisual matter and hypercitations, resulting work cannot translate to static print mediums; it will not be possible for student to simply print out "hard copy" of their papers and "turn them in." Multimedia research, writing, and other ePortfolio creations will come to exist only in the digital realm, as enduring, interactive performances. Asynchronous absorption of these performances protracts time and expands exchanges, enriching the reflective experience for both ePortfolio creators and spectators. The constructive self-estrangement that ePortfolio affords also permits greater reflection, as a staging area is supplied for students to formulate, communicate, and evaluate their own performances. In a technologically enhanced world where everyone and everything performs, reviving and digitizing long-established folio practices prompts learners to set their stage, select props, and consider their audience. Interactive ePortfolio exchanges with peers further sensitize students to the fact that, in school and in everyday life, each player simultaneously perceives as many performances as s/he gives.

References

Barnes, K., Marateo, R., & Ferris, S. (2007). Teaching and learning with the net generation. *Innovate Journal of Online Education, 3*(4), Retrieved from http://www.innovateonline.info/index.php?view=article&id=382

Blau, H. (1990). *The audience*. Baltimore, MD: Johns Hopkins University Press.

Boal, A. (1985). *Theatre of the oppressed*. New York, NY: Theatre Communications Group.

Brecht, B., & Willett, J. (1964). *Brecht on theatre: The development of an aesthetic*. New York, NY: Hill and Wang.

Cambridge, D., Cambridge, B. L., & Yancey, K. B. (2009). *Electronic portfolios 2.0: Emergent research on implementation and impact*. Sterling, VA: Stylus.

Chen, H. L. (2009). Using ePortfolios to support lifelong and lifewide learning. In Cambridge, D., Cambridge, B. L., & Yancey, K. B. (Ed.), *Electronic portfolios 2.0: Emergent research on implementation and impact* (pp. 29-36). Sterling, VA: Stylus.

Cheng, M. (2002). *In other Los Angeleses: Multicentric performance art*. Berkeley, CA: University of California Press.

Cook, B. (2009). *Producing audiovisual knowledge: Documentary video production and student learning in the American studies classroom*. Retrieved from http://www.academiccommons.org/commons/essay/documentary-video-production-and-student-learning

Dixon, S., & Smith, B. (2007). *Digital performance: A history of new media in theater, dance, performance art, and installation*. Cambridge, MA: MIT Press.

Eynon, B. (2009). *It helped me see a new me: ePortfolio, learning and change at LaGuardia Community College*. Retrieved from http://www.academiccommons.org/commons/essay/ePortfolio-learning-and-change

Freire, P. (2000). *Pedagogy of the oppressed*. New York, NY: Continuum.

Giannachi, G. (2004). *Virtual theatres: An introduction*. London, UK: Routledge.

Goffman, E. (1959). *The presentation of self in everyday life*. Garden City, NY: Doubleday.

Hamlisch, M., Kirkwood, J., Dante, N., Kleban, E., & Noeltner, R. H. (1977). *A Chorus Line*. S.l.: E.H. Morris.

Hughes, J. (2009). Becoming ePortfolio learners and teachers. In Cambridge, D., Cambridge, B. L., & Yancey, K. B. (Ed.), *Electronic Portfolios 2.0: Emergent research on implementation and impact* (pp. 51-58). Sterling, VA: Stylus.

McKenzie, J. (2001). *Perform or else: From discipline to performance*. London, UK: Routledge.

Saltz, D. Z. (1997). The art of interaction: Interactivity, performativity, and computers. *Journal of Aesthetics and Art Criticism, 56*(2), 117-127.

Stein, G. (1975). *Last operas and plays*. New York, NY: Vintage Books.

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Fostering Integrative Knowledge through ePortfolios

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This paper presents results from a study which tested the validity of a conceptual model which proposes six dimensions of integrative knowledge and learning that result from students engaging in the core activities associated with the Integrative Knowledge Portfolio Process and Generative Knowledge Interviewing. These methods facilitate learning experiences that help students to identify, connect, synthesize and demonstrate knowledge and skills they are gaining from all areas of life. Six hundred and twenty students (both traditional and non-traditional) from 14 different learning environments across two campuses responded to pre/post surveys before and after they engaged with these methods. Results showed that students made significant gains on all six dimensions of integrative knowledge and learning which resulted in their increased capacity to: 1. identify, demonstrate and adapt knowledge gained within/across different contexts; 2. adapt to differences (i.e. in people and situations) in order to create solutions; 3. understand and direct oneself as a learner; 4. become a reflexive, accountable, and relational learner; 5. identify and discern one's own and others' perspectives; and 6. develop a professional digital identity. Students' gains on these dimensions were significant regardless of their academic discipline, race/ethnicity, gender, year in school or the type of learning environment in which they engaged with the Integrative Knowledge Portfolio Process.

Student Learning Needs for the 21st Century

According to leading educational scholars, in order to be successful in the 21st century workplace, today's college students must be taught how to be highly flexible, integrative and adaptive life-long learners (Newell, 1999). They need to be people who are capable of keeping pace with the rapidly changing demands of new knowledge, emerging work roles, and changing work environments (Stuart & Dahm, 2006). To meet these demands, today's college students must develop an array of capacities to integrate what they learn in many situations and across time (Huber & Hutchings, 2004; Newell, 1999).

The push for integrative and lifelong learning is accompanied by calls for greater accountability throughout higher education. The American Association of Colleges and Universities has defined 14 Essential Learning Outcomes for undergraduate education focused on preparing more integrative, reflective, creative, and civically engaged lifelong learners (American Association of Colleges & Universities, 2008). Similarly, organizations and accrediting institutions in numerous professional fields (e.g. Engineering, Medicine, Dentistry, Nursing, and Social Work) have defined learning outcomes for educating lifelong learners capable of reflective, integrative and evidence-based practices (Seeley-Brown & Adler, 2008).

In response to these challenges, higher education institutions across the world are expending considerable resources developing new curricula and technologies to foster integrative learning (Huber &

Hutchings, 2004). Some U.S. schools now have "Integrative Studies" programs that encourage students to build a unique interdisciplinary major or area of study based in their interests in solving "real-world" problems. Technologically, ePortfolios are increasingly seen as an ideal tool for helping students connect disparate experiences, create meaning from their learning, and develop intentional digital identities (Barrett, 2007; Cambridge, 2008; Clark & Eynon, 2009). According to a Campus Computing survey, there are ten times more institutions adopting ePortfolios in the US now than ten years ago (Batson, 2010).

Yet despite the growing emphasis globally on using ePortfolios to foster and demonstrate integrative and lifelong learning, the terms *integrative* and *lifelong learning* have yet to be defined. Currently, there is very little theory, established best-practices and/or research to support these endeavors.. It is not yet clear, for example, what kinds of integrative learning experiences lead students to connect, integrate, and synthesize their learning, or how ePortfolios can be used to facilitate that process. This paper begins to address these gaps by first describing a conceptual model and pedagogy for portfolio-based integrative and lifelong learning that is now being used by a number of institutions, and then presenting results from a survey-based construct validation process that tested the efficacy of this model on 620 students from fourteen different academic and co-curricular units on two University of Michigan campuses.

The research reported here contrasts with previous studies in a number of important ways.

First, it offers a conceptual model that articulates and operationalizes six dimensions of integrative knowledge and learning.   Second, it clearly articulates an integrative portfolio-based pedagogy, the Integrative Knowledge Portfolio Process that is now being used to facilitate integrative learning through ePortfolios within a number of institutions, disciplines, and learning environments.   Third, it tests the efficacy of a pre/post survey instrument that was specifically designed to measure the conceptual dimensions of integrative knowledge and learning proposed here.   The six dimensions of integrative knowledge and learning that are the focus of this study include students' learning to:

1. Identify, demonstrate and adapt knowledge gained within/across different contexts (i.e., the ability to recognize the tacit and explicit knowledge gained in specific learning experiences and the capacity to adapt that knowledge to new situations);
2. Adapt to differences in order to create solutions (i.e., the ability to identify and adapt to different people, situations, etc., while working with others to create positive change);
3. Understand and direct oneself as a learner (i.e., the ability to identify one's prior knowledge, recognize one's strengths and gaps as a learner, and know how one is motivated to learn);
4. Become a reflexive, accountable and relational learner (i.e., the ability to reflect on one's practices and clarify expectations within oneself while also seeking feedback from others);
5. Identify and discern one's own and others' perspectives (i.e., the ability to recognize the limitations of one's perspective and seek out and value the perspectives of others); and
6. Develop a professional digital identity (i.e., the ability to imagine how one will use current knowledge and skills in future roles and how one will create an intentional digital identity).

The theoretical and research basis of these dimensions, as well as a description of the pedagogy that fosters these dimensions, is the focus of this study.   This study presents an analysis of 620 students' responses to pre/post surveys before and after they engaged in the core activities associated with the Integrative Knowledge Portfolio Process, a series of structured learning experiences that help students to identify, connect, synthesize and demonstrate the knowledge and skills they are gaining from all areas of life. Data analysis was guided by three research questions:

Do students' responses to pre/post surveys that measure various aspects of integrative learning actually reflect the six dimensions described in the authors' model?

Do students' perceptions of these six dimensions vary according to their year in school, academic discipline, gender or race/ethnicity?

Do features of the learning environment influence gains on these dimensions?

Context and Background of the Study

In 2008, the University of Michigan (UM) Mportfolio Project was formally established as a joint effort of the Division of Student Affairs and the Office of the Provost in order to create a pedagogy and technology to help students know and articulate what they have learned at UM. Research conducted with UM student leaders in 2005-2006 showed that even though most of these leaders reported having "extraordinary" learning experiences at UM, the vast majority of them could not describe what they had learned, why or how it was valuable to them, or how they might apply their knowledge and skills they had gained at UM once they left the university (Pathways Report, 2006).

The MPortfolio Project takes place in a number of diverse learning environments on two campuses. UM Ann Arbor is a highly selective research institution that serves traditional four-year residential undergraduate students. UM Dearborn is a metropolitan institution serving primarily non-traditional and commuter students from the greater Detroit area. Together, the two campuses serve over 45,000 students a year. Thus, the context of the MPortfolio Project involves schools, departments, and co-curricular programs that serve diverse undergraduate, professional, and graduate students with a wide-range of learning and professional goals (e.g., to be future social workers, health care providers, and educators, as well as leaders in business, research, and non-profit arenas).

Relevant Literature

The literature focuses on understanding how the term *integrative learning* is used in higher education contexts, including the factors involved in educators becoming more integrative and the impact integrative learning has on students.

Perhaps the biggest challenge to understanding integrative learning is that the term itself is yet to be clearly defined or operationalized. As Huber and others note (2007), the concept is still evolving as educators reinvent its meaning within specific contexts.   That

said, the most widely cited article is Huber and Hutchings' 2004 work, *Integrative Learning: Mapping the Terrain*. This work articulates a rather complex view of the term:

> One of the great challenges in higher education is to foster students' abilities to integrate their learning across contexts and over time. […] The capacity to connect is central...whether focused on discovery and creativity, integrating and interpreting knowledge from disciplines, applying knowledge through real-world engagements, [integrative learning] builds intentional learners...and the habits of mind that prepare students to make informed judgments in the conduct of personal, professional, and civic life...[leading to] personal liberation and social empowerment. (2004, p.1)

Several authors have pointed out that the concept of integrative learning includes multiple dimensions and draws from a number of learning theories. For instance, Huber's and Hutchings' (2004) definition emphasizes constructivism (Schamber & Mahoney, 2008), action and experiential learning (Dewey, 1938; Kolb, 1984), as well as the development of reflective-practitioners (Schön, 1983). Booth, McLean, & Walker (2009) and Melendez, Bowman, Erickson, & Swim (2009) emphasize that integrative learning efforts must also develop students' capacities for self-directed learning (Youatt & Wilcox, 2008), self-authorship (Baxter Magolda, 1998), adaptive expertise (Bransford, Mosborg, Copland, Honig, Nelson, Gawel, Phillips, & Vye, 2009), and democratic citizenship (Nussbaum, 2006).

These diverse theoretical underpinnings inform several different approaches to integrative learning. These approaches generally fall into one or more of the following domains: 1) becoming an intentional and reflective learner (Mentkoski & Associates, 2000; Booth et al., 2009); 2) having a process orientation toward knowledge and learning (Melendez et al., 2009); and, 3) working with others to address social issues (Huber & Hutchings, 2004; Mentkoski & Associates, 2000). The prevalence of these domains in the literature is explained more fully below.

The *becoming an intentional and reflective learner* domain refers to the development of self-directed learners who take responsibility for their learning, reflect on their experiences and intentionally develop self-authorship; that is, the ability to consciously create meaning and identity from their learning and life experiences (Baxter Magolda,1998). According to Huber & Hutchings (2004), an integrative learner possesses "a sense of purpose that serves as a kind of 'through line'... connecting the sometimes far-flung and fragmentary learning experiences they encounter..." (p. 6). Students need to develop meta-reflective capacities, abilities that allow them to reflect upon, understand, and value their strengths, gaps, and development as learners over time and across contexts (Freshwater & Rolfe, 2001).

The *process orientation toward knowledge* domain is informed by action and experience-based learning theories (see Dewey, 1938; Kolb, 1984). It is premised on the assumption that learners need to apply academic knowledge to real-world problems in order to understand what they know and how to use their knowledge in the future. Through application, learners develop the knowledge, skills and habits of mind they need to face the ambiguous challenges of life. Ideally, integrative experiences should teach students how to identify, synthesize, and apply knowledge from different areas (e.g., from courses, co-curricular experiences, paid work, internships, and community service) and adapt the insights and skills learned in one place to new situations. This requires learning how to reflect on and connect seemingly disparate learning experiences (Reynolds & Patton, 2011). The Alverno College faculty are generally considered the pioneers of this type of integrative learning (see Mentkowski & Associates, 2000).

Lastly, the *working with others to address social problems* domain refers to preparing students to contribute to the larger society, learning to engage with the "other" in order to expand their own knowledge, and work effectively in diverse environments (see Booth et al., 2009). In this domain (which is the least prevalent in the literature), students learn how to seek out and synthesize the perspectives and approaches of others in order to expand their own world-view. Ideally, integrative learning develops students' capacity for "reflection-in-action" the ability to revise their perceptions or approach based upon understanding additional perspectives, and by incorporating feedback from others and the environment (Schön, 1984 cited in Huber & Hutchings, 2004).

With regards to the development of integrative learning experiences, one of the most prevalent themes throughout the literature is that the process of creating integrative learning environments is difficult and time-consuming. In order to re-design programs to foster integrative learning, educators must cross disciplinary boundaries and engage in ways that challenge their own areas of expertise (Mach, Burke, & Ball, 2008). This requires institutional leadership, and at times, considerable resources (Huber & Hutchings, 2004). There is general agreement as to the barriers to integrative learning. Many faculty have been trained within narrow disciplines and are challenged by the interdisciplinary nature of integrative learning; most do not know what "integrative learning" means, let alone

how to teach or evaluate it (Booth et al., 2009; Mach et al., 2008; Melendez et al., 2008). Traditional course-credit systems reinforce academic silos (Graff, 1992). Many institutions underestimate the important role that co-curricular and informal learning experiences have on students' learning. This knowledge is often unrecognized and/or misunderstood (Huber & Hutchings, 2004). Moreover, the work involved in planning integrative learning experiences is often invisible and unlikely to be recognized during promotion processes (Huber, Hutchings, Gale, Miller, & Breen, 2007). Integrative efforts can be seen as competing with traditional programs for scarce resources and faculty time (Mach et al., 2008). Given these barriers, it is not surprising that much of the literature focuses on the challenges educators face in trying to reconfigure their programs to be more integrative. Far less attention has been paid to understanding how students learn across these integrative learning domains.

In addressing students' learning, all three domains described above can be found in the literature (although not in the same place). However, most works that address both ePortfolios and integrative learning tend to emphasize identity development, reflection, autonomous learning and engagement (Cambridge, 2008; Chen, 2009; Kirkpatrick, Renner, Kanac, & Goya, 2009; Light, Sproule, & Lithgow, 2009; Yancey 2009). The most well recognized example of this is LaGuardia Community College's ePortfolio approach, which supports students in expressing their identities while making connections across the curriculum (Eynon, 2009). Similarly, the values-driven ePortfolio environment of Kapiolani Community College helps students integrate traditional Hawaiian values in an effort to strengthen their indigenous identities and become more autonomous and engaged learners (Kirkpatrick et al., 2009).

Evidence regarding the impact of integrative courses and programs on students' learning is quite limited. Some schools have created institution-wide learning outcomes and rubrics to assess integrative learning (see Mentkowski & Associates, 2000). The challenge is that much of this work is unpublished assessment research conducted for institutional accountability purposes. The American Association of Colleges and Universities has created an integrative learning "meta-rubric" that is now being adapted by institutions as part of the AAC&U VALUE initiative (AAC&U, 2009). This rubric was also used in part by the authors to create the survey instrument that is now used on the UM campus (Rhodes, 2010).

The few systematic studies of students' learning to date have primarily used indirect measures to evaluate the effectiveness of integrative learning efforts, and such studies rarely connect specific pedagogies with student learning outcomes. For instance, in describing the impact of a week-long integrative calculus experience, Melendez et al., (2009) compared two years of student satisfaction scores (from students who did and did not have an integrative experience). Since students who experienced the integrative curriculum reported greater satisfaction, the authors concluded that the integrative experience was a success. In another example, this one at an institutional level, Eynon (2009) used student retention and engagement data to demonstrate the positive impact of LaGuardia's integrative approach to ePortfolios. Results showed significant gains in retention for high-risk students due to increased capacities to engage in learning and creatively express their identities (Eynon, 2009). Similarly, Kapiolani Community College also found that students who engaged with values-based ePortfolios showed significant gains in measures of engagement (Kirkpatrick et al., 2009).

Although these studies show that an integrative approach to ePortfolios can have a positive impact on students' learning, considerable gaps still exist. Terms such as "reflection" and "integrative learning" are used to refer to a wide range of approaches to learning, and yet these terms are rarely conceptualized or operationalized along multiple dimensions, as we do in this study. Moreover, the link between different approaches to integrative learning and ePortfolios, and how those approaches actually impact students, is still largely unknown. In this study, the six dimensions of integrative learning are examined as a consequence of students' participation in an integrative ePortfolio process in which educators from fourteen different academic and co-curricular settings customized the same core activities associated with the Integrative Knowledge Portfolio Process.

The Integrative Knowledge Portfolio Process Model

The purpose of the Integrative Knowledge Portfolio Process Model (IKPP) is to facilitate learners' in identifying, integrating, and synthesizing their emergent knowledge, skills and identities over time, across contexts and in relation to others. In doing this integrative process, students develop a sense of personal agency and the capacity to respond to complex social issues. The process evolved through a multi-year action research project conducted at UM between 2002-2006. This initial research sought to identify the types of pedagogy and learning experiences that are needed to educate effective leaders and change agents (Peet, 2006; 2010; 2011). Over time, IKPP evolved into a series of core activities that have since informed the development of curriculum change guidelines, training modules, meta-reflection prompts, exercises and assessment instruments that are now being adopted by

Figure 1
Conceptual Model of the Integrative Knowledge Portfolio Process
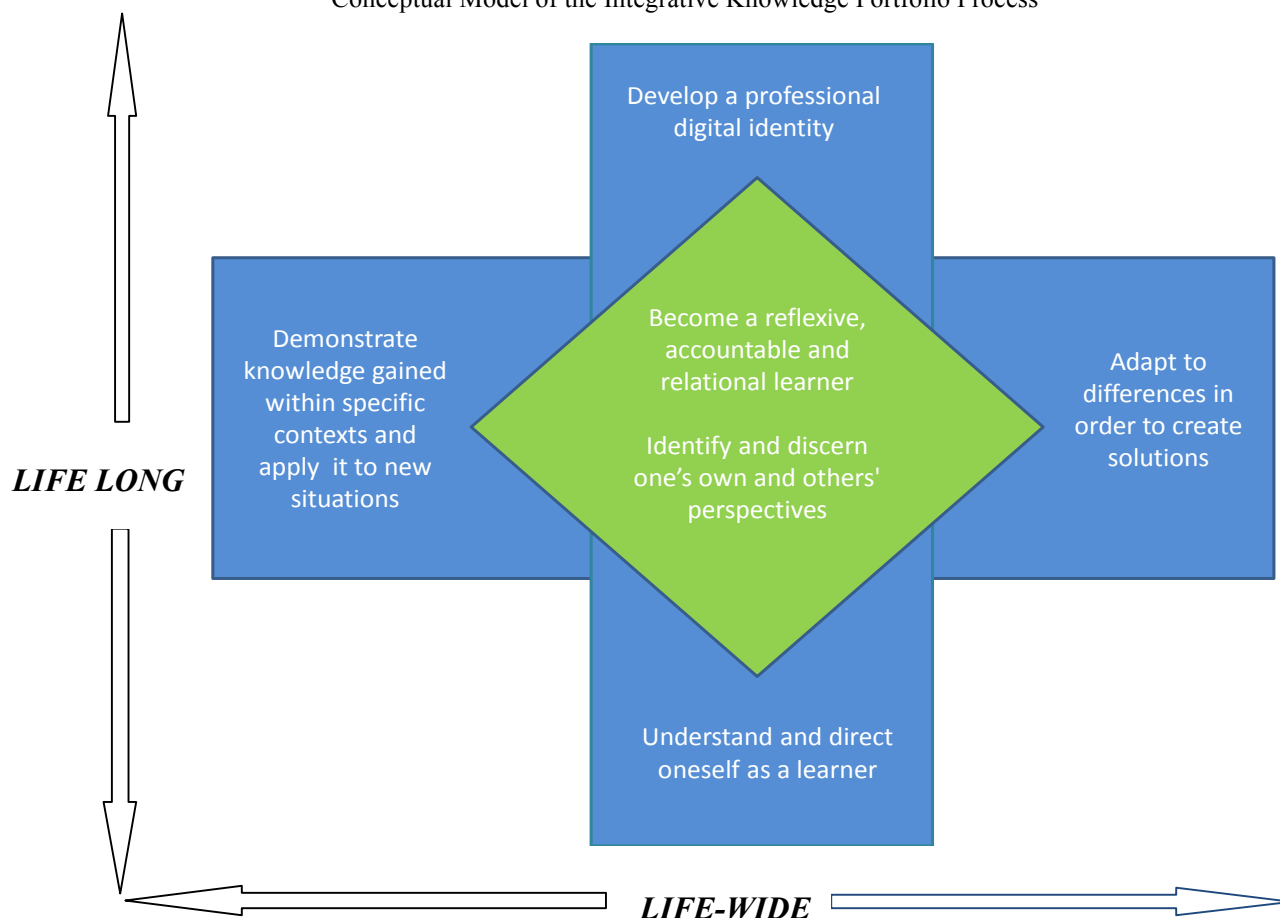
number of colleges and universities and within diverse learning environments both at UM and at other institutions (e.g., Chemistry, English, Education, Social Work, Dentistry and Physical Therapy, as well as student organizations and service learning experiences). Note: As of May 2011, institutions that are in the process of adopting IKPP include: Boston University*, Clemson University*, DePaul University*, Norwalk Community College, Long Island University, and Mercy College, NYC*, Oberlin College* and Portland State University*. Institutions with an * are collaborating with the University of Michigan on a 3-year FIPSE grant (Fund for Improvement in Post-Secondary Education) from the U.S. Department of Education.

Underlying Assumptions and Research

The IKPP model is based upon several critical assumptions and research on learning and leadership development conducted at UM since 2002 (see Peet, 2006; Fitch, Reed, Peet, & Tolman, 2008). It begins

with the notion that learning is both a lifelong and life-wide activity that occurs within people both consciously and unconsciously throughout their lives. Previous research related to IKPP (Peet, 2006) showed that in order to truly integrate their learning, students must first learn how to identify and demonstrate the tacit knowledge (the unconscious and informal ways of knowing people develop from informal learning experiences) they've gained from previous experiences, and connect it to the explicit knowledge (the formal concepts, ideas and methods learned through formal education) they develop in their academic courses. The literature on tacit knowledge emphasizes the socially embedded nature of knowing – that a person's knowledge of how to apply a particular skill, method, etc., is a tacit and unconscious process that recedes and/or emerges as they move in and out of different contexts (Nonaka & Takeuchi, 1995). Thus, in the IKPP model, each new context and relationship a learner encounters *is seen as a distinct knowing location*. Therefore*,* the unconscious knowledge, skills and capacities embedded within a particular context or

relationship can be retrieved and documented through meta-reflection (the ability to think about the process of learning) through dialogue with others.

Additionally, the IKPP model draws from a constructivist framework, which posits that learning and knowledge production are entirely relational and social processes that are inextricably linked to the development of learners' identities, experiences and positions within society (Garrison, 1995).

The conceptual model of the Integrative Knowledge Portfolio Process proposed here (see Figure 1) reflects an emphasis on tacit knowledge, meta-reflection, and the relational nature of knowledge and identity development (Nonaka & Takeuchi, 1995). The six dimensions of integrative learning introduced earlier in this paper are situated in the model as a set of capacities that foster critically reflexive lifelong and life-wide learning:

- The *lifelong learning capacities* (the vertical axis) represent the need for learners to meta-reflect on their identities and experiences in order to synthesize and demonstrate their learning. The dimensions of integrative learning include the ability to understand and direct oneself as a learner and develop a professional digital identity; this includes being able to identify and demonstrate one's prior learning and sources of inspiration as well as one's growth and learning over time.
- The *life-wide learning capacities* (horizontal axis) represent learners developing and applying practical "how-to" knowledge within and across different contexts. Integrative learning dimensions include the ability to demonstrate and apply tacit and explicit knowledge gained within and across specific contexts and adapt to differences in order to create solutions.
- The *critically reflexive capacities* (the center) refer to learners developing the capacity to continually reflect on and adapt to changes within themselves, others, and the environment in order to work effectively with others. Integrative learning dimensions include the ability to become an accountable and relational learner and identify and discern ones' own and others' perspectives.

Core Activities Associated with the Integrative Knowledge Portfolio Process

The six dimensions of the Integrative Knowledge Portfolio Process model are achieved through a series of core activities that have evolved from more than seven years of action research. The activities are based upon the adoption of IKPP in many different learning environments and feedback from dozens of educators and hundreds of students (see Peet, 2006; 2010).

Educators who implement IKPP (e.g., in the context of a courses, co-curricular program, and/or living-learning community) are required to participate in a 2-3 day training in which they are introduced to the core activities outlined below and are taught how to integrate these activities into the existing courses, assignments, and co-currucualr programs (for a more complete description of the core activities see Peet, 2010).

Core Activity A - Identification and Organization of Key Learning Experiences: Students identify and reflect upon 7-12 important learning experiences from academic, co-curricular and other life contexts. (educators can also narrow this exercise to focus on key experiences from a particular course/program). Students then sort each experience into one of 40 over-arching knowledge/skill categories (e.g. "Research," "Leadership," "Global Engagement," etc.). Through this activity, students learn how their prior key learning and life experiences can actually translate to "real world" knowledge and skills. Each experience then becomes a potential Example of Work page for the Work Showcase section of students' ePortfolios (see Appendix A).

Core Activity B - Generative Knowledge Interviewing and Listening (GKIL): This is a process of storytelling, listening, dialogue, and documentation that helps students identify and document the tacit knowledge embedded within their key learning experiences. By having students generatively listen to one another, they learn how to surface, identify, and document their own and each others' tacit capacities, strengths, and skills (i.e., the specific types of adaptive behaviors needed to interact with people from backgrounds different from their own).

Core Activity C - Structured Meta-reflection: Students are guided to reflect upon what they have learned from each key learning experience and how it impacts their overall development. In these meta-reflections, students are prompted to describe the context of the experience, why it was important to them, "a-ha" moments, the types of knowledge/skills they gained, and how they imagine applying that knowledge in the future. They are also prompted to think about how the experience connects to larger personal, civic, or social change goals and the impact their efforts may have had on others. Through these meta-reflections, students develop individual Example of Work pages for their Integrative Knowledge Portfolio, typically one to two page single-spaced narratives that are combined with visual elements (pictures or graphics). A completed integrative eportfolio has between five and fifteen Example of Work pages in the Work Showcase section of the portfolio.

Core Activity D - Identification of Values and Beliefs: A series of exercises that help students identify their values and beliefs as well as the sources of curiosity and engagement that underlie their decisions and actions. This includes uncovering the passions, interests, and concerns that most engage and inspire them. They are then guided to organize their beliefs thematically and write a Philosophy Statement page (using text and visuals) for their portfolio. These statements illustrate what students believe, why it is important to them, and how it informs their decisions and actions.

Core Activity E - Creation of an Integrative Knowledge Portfolio: Students look back on their Examples of Work pages and Philosophy statements to identify overarching themes to be represented in the Welcome and Goals pages of their Integrative Knowledge Portfolios. Students also create a coherent design and layout of text and visuals across portfolio pages and seek feedback on the completed product from a variety of people.

Core Activity F - Reflection on Institutional Learning Outcomes: After students have integrated their experiences and synthesized their knowledge in their Example of Work pages, they are then prompted to connect the Example of Work page to specific institutional learning outcomes. Students are then prompted to write a brief reflection about why the learning outcome(s) are relevant to that Example of Work page.

Example Integrative Knowledge Portfolios can be seen at http://tinyurl.com/integrate2, https://umich.digication .com/portfolio/directory.digi or http://mportfolio.umich .edu/showcase.html

Example of Core Activities in Practice: University Course 421

The main goal of the course is to help students as future residence hall staff members learn how to build, develop, and nurture a supportive and stimulating multicultural community. To accomplish that, the course covers readings and active learning exercises on identity development, power, privilege, and conflict in intergroup relations and the work of being an ally. The goal of the Integrative Knowledge Portfolio Process in this course is to help students connect the theory and principles of the course with the role expectations, values, and professional skills they will need in order to become successful student residence hall staff members. The faculty integrated the core activities of IKPP into existing course materials, assignments and exercises so that by the end of the eleven-week course, students had experienced five

of the six core activities listed above and had created their own Integrative Knowledge Portfolios. A description of how students experienced the core activities is offered below.

In an effort to have students draw upon their prior knowledge related to their potential roles of residence hall staff members, students were instructed to identify and reflect on 3 previous key learning experiences that involved facilitation and/or helping other students (Core Activity A). After reflecting on and writing about the 3 experiences individually, students were then guided to share the three experiences with a partner using the principles and steps of generative knowledge interviewing and listening (Core Activity B). This process allowed students to identify the tacit and explicit values, principles and capacities that they would like to embody in their role as staff members. Finally, this process resulted in students creating a Philosophy Statement Page for their Integrative Knowledge Portfolios (Core Activity D).

Two prior assignments in the course, one related to power and privilege and another related to identity development, were modified to prompt students to integrate, synthesize, and demonstrate what they had learned from readings, in-class exercises, and discussion about these topics. Students were guided by a series of structured meta-reflection questions (Core Activity C) that prompted students to think about the knowledge, skills, and/or insights they gained from the power/privilege and identity development materials, how these related to their own identities, and the implications of what they had learned with regards to their future roles as residence hall staff members. After writing their responses to the meta-reflection prompts, students then discussed what they had learned with a partner using the generative interviewing and listening method (Core Activity B). Students then refined their initial meta-reflections based upon the insights gained from the generative interview. This process then led to the creation of two Example of Work pages in their Integrative Knowledge Portfolios (Core Activity E). Toward the end of the semester, students were required to create a Integrative Knowledge Portfolio (Core Activity E) by pulling together and refining their Philosophy Statement, the two Example of Work pages, and a Welcome Page. These portfolios served as the final product in the course, substituting for what had previously been a final ten to twelve-page paper. These portfolios were also forwarded to the residence hall supervisors the students will be working for in the upcoming academic year. It is expected that the supervisors will find the portfolios more useful as a way to

Table 1
Demographic Overview of Participants
in Pre/Post Quantitative Survey

Demographic	Percentage
Campus	
Ann Arbor	63%
Dearborn	37%
Academic Unit	
Liberal Arts	49%
Education	32%
Engineering	7%
Business	4%
Other	8%
Academic Level	
Junior	30%
Senior	25%
Freshman	19%
Sophomore	16%
Grad Masters	10%
Gender	
Female	71%
Male	29%
Ethnicity	
White	65%
Asian	14%
African American	8%
Hispanic	4%
Other	9%
Age	
18	19%
19-20	40%
21-29	31%
30- plus	10%

know their staff members than the final papers had been in previous years, thus enhancing the effectiveness of supervision of student staff members' work with new residents.

Research Methods

Participants

Educators affiliated with fourteen MPortfolio sites (e.g., Chemistry, Social Work, Education, English, Michigan Research Community, Program on Intergroup Relations, Public Health, Arts at Michigan, Women in Science and Engineering, Writing Programs, Resident Advisor Training Programs) agreed to use the pre/post survey with their students. For each of these sites, educators had previously gone through the training for IKPP and were committed to having students engage with at least five of the six core activities of the Integrative Knowledge Portfolio Process (since UM does not have a set of common institutional learning outcomes for undergraduate education, most educators

did not engage in Core Activity F, "reflection on institutional outcomes"). Educator and student participation was voluntary.

A total of 620 students experiencing the Integrative Knowledge Portfolio Process within at least one academic course or co-curricular setting during two academic years (2009-2010 and 2010-2011) responded to both the pre and post survey. Since many more students were involved in Mportfolio projects where the pre and post surveys were not administered, it is important to note that these 620 respondents were found to be representative of all MPortfolio participants with respect to enrollment at the two U of M campuses (Ann Arbor and Dearborn), and with regards to gender and race/ethnicity. Table 1 describes these 620 students.

Measures

A pre/post survey instrument was developed and pilot tested during the 2009-2010 and 2010-2011 academic years (usually at the beginning and end of a term in courses/programs). The pre/post instrument combined UM's unique definition of integrative knowledge and learning (which emphasizes critical reflexivity, tacit knowledge sharing and working for social change) with select language from the AAC&U VALUE rubrics (see Rhodes, 2010) and dimensions similar to those outlined in the review of the literature. This resulted in a 37-item pre/post survey (see Appendix B). The items addressed students' recognition of their strengths and challenges as learners, identification of their values and beliefs, an understanding of their social identities and perspectives, skills in working across social/cultural differences, awareness of how one gains different types of knowledge, adaption of knowledge/skills to new contexts, evaluation of their work, the ability to listen and seek feedback, recognition of one's own passions and sources of curiosity, the development of a professional identity, working with others to make a difference, and understanding how one's actions/decisions affect others. Participants were asked to rank their degree of agreement (5 point Likert-type scale from strongly disagree to strongly agree) for each of the 37 statements. The surveys also included demographic questions.

Analyses

Three sets of analyses were conducted: 1) a factor analysis of the students' responses to the 37 statements on the pre-survey and post-survey; 2) statistical significance of gains students exhibited on the summary measures of integrative learning generated by the factor analysis; and 3) analyses of variance to assess if student

Table 2
Descriptive Statistics for Six Integrative Knowledge Portfolio Factors (Post-Survey) (N=620)

	No. of items	*M (SD)*	Skewness	Kurtosis	Alpha
Demonstrate knowledge gained within and across specific contexts	11	4.26 (.56)	-.72	1.70	.93
Recognize and adapt to differences	6	4.49 (.49)	-1.23	3.88	.88
Understand and direct oneself as a learner	7	4.42 (.47)	-.87	3.60	.87
Become a reflexive, accountable and relational learner	6	4.31 (.52)	-.61	1.86	.84
Identify and discern my own and others' ethics and perspectives	4	4.45 (.53)	-1.24	3.61	.82
Develop a professional digital identity	3	4.09 (.78)	-.77	-.03	.85

gains differed by the number of IKPP activities the students completed, if they had participated in MPortfolio in more than one class/program, and by race, gender, and academic division (natural science, social science, and humanities).

Survey Results

Factor analysis: Six dimensions of integrative learning. A factor analysis of the 37 items was conducted using varimax rotation with Kaiser normalization. A total of six factors were extracted, explaining 65.49% of the variance. These factors seemed to measure the theoretical constructs of integrative learning in the model articulated for this article. The six factors included all 37 items, with factor loadings unique to each of the six factors (see Appendix C).

The first factor, "Demonstrate knowledge gained within and across specific contexts" (Eigen value 16.83), measured students' ability to identify the knowledge they are gaining within a particular learning experience, demonstrate that knowledge to others, and then apply that knowledge to new situations and contexts. For example, *"I can demonstrate the knowledge/skills I've gained from pursuing an area of study, or engaging in a series of actions that reflected my passions and interests."*

The second factor, "Recognize and adapt to differences in order to create solutions" (Eigen value 2.05), measured students' ability to recognize and adapt to different types of people and contexts in order to work effectively with others to create positive change. For example, *"I can work with others to identify a problem or need within a specific field, group, organization, or community."*

The third factor, "Understand and direct oneself as a learner" (Eigen value 1.65), measured students' comprehension of how their own identities, values, personal interests and passions influence their learning and related decisions and actions. For example, *"I can clearly identify the passions, interests, and sources of curiosity that influence my learning, work and social life."*

The fourth factor, "Become a reflexive, accountable and relational learner" (Eigen value 1.42), measured students' ability to continually seek feedback and input from others in order to understand the impact of their decisions and actions on others and the environment: *"I seek feedback on a regular basis in order to understand if and how my work meets the needs, standards, and/or expectations of others."*

The fifth factor, "Identify and discern my own and others' ethics and perspectives" (Eigen value 1.24), measured students' understanding how their own and others' perspectives and values influenced interactions and decisions For example: *"I can identify specific moments or experiences where I have developed or practiced ethical principles in my decision-making and actions."*

The sixth factor, "Develop a professional digital identity" (Eigen value 1.04), measured the capacity to imagine what they will need in the future, how they are representing the knowledge, skills and capacities they are gaining thus far. For example, *"I am continually updating and expanding my on-line professional identity in order to demonstrate my knowledge, skills, values, goals and to others."*

Composite scores were created for each of these six factors, based on the mean of the items that had their primary loadings on each factor. Descriptive statistics are presented in Table 2. The skewness and kurtosis indicated that all factors had a negatively skewed distribution. Also, the Cronbach's alpha statistics indicated that all factors had a relatively high internal consistency.

Student gains on these measures. For each factor, the pre-survey composite scores were compared with the post-survey composite scores using paired-sample t-tests in order to evaluate changes in students' perceptions within each of the six dimensions. Change is represented by difference scores from pre to post.

Table 3 shows that students who engaged in the core activities associated with the Integrative Knowledge Portfolio Process showed significant gains on all six of these measures of integrated learning. The three largest gains from pre to post survey were on the

Table 3
Differences in Pre & Post Composite for Measures of Six Factors for Integrative Learning

Measure	N	Pre- Survey Mean	Pre- Survey SD	Post-Survey Mean	Post-Survey SD	T-Statistic	Change	SD
Demonstrate knowledge gained within and across specific contexts	620	3.88	.67	4.26	.56	14.91	.38*	.63
Recognize and adapt to differences	620	4.42	.45	4.49	.49	3.61	.07*	.48
Understand and direct oneself as a learner	620	4.25	.48	4.42	.47	8.94	.17*	.47
Become a reflexive, accountable and relational learner	607	4.10	.53	4.31	.52	8.97	.21*	.56
Identify and discern my own and others' ethics and perspectives	620	4.30	.50	4.45	.53	6.78	.15*	.56
Develop a professional digital identity	609	3.49	.86	4.09	.78	16.35	.60*	.91

Note: $* = p < .001$

measures of demonstrate knowledge gained within and across specific contexts, become a reflexive, accountable and relational learner, and develop a professional digital identity. In addition, participants also became somewhat more modestly able to recognize and adapt to differences, understand and direct oneself as a learner, and identify and discern their own and others' ethics and perspectives.

Variations in the amount of change. Results from analysis of variance show that gains from before to after completing the Integrative Knowledge Portfolio Process were especially pronounced among students who participated (n=46) in more than one MPortfolio course or program. Such students showed significantly greater gains in demonstrating knowledge gained within and across specific contexts [F (1, 618) = 11.96, p = .001] and understanding and directing oneself as a learner [F (1, 618) = 4.77, p = .029] as compared to the much larger number of students (n=574) who participated in only one course or program.

Some MPortfolio learning environments also produced larger student gains than others. Classifying the environments according to the three major academic divisions (natural science, social science, and humanities) (Biglan, 1973), the results show that participants from the natural sciences consistently gained the most in demonstrating knowledge gained within and across specific contexts [F (2, 475) = 5.39, p = .005], recognizing and adapting to differences [F (2, 475) = 3.26, p = .039], understanding and directing oneself as a learner [F (2, 475) = 12.16, p < .001], and identifying and discerning their own and others' ethics and perspectives [F (2, 475) = 3.06, p = .048]. Participants from the humanities gained the most in becoming a reflexive, accountable and relational learner [F (2, 475) = 6.84, p = .001]. It is important to note that natural science and humanities students had significantly lower pre-test scores on these five dimensions than social science students and thus had

somewhat more room to change. At the same time, it is important to note that there were no significant differences between academic divisions on the post-survey scores, indicating that all students arrived at similar high-levels of agreement in their responses along the different factors.

Finally, analyses showed that there were no significant differences of participant gains based upon on race/ethnicity, gender, class level (e.g., freshman, sophomore, etc.), or survey year (e.g., 2009-2010 vs. 2010-2011) indicating that IKPP seems to be effective for students from multiple backgrounds regardless of the year in which they engaged in the process.

Discussion

The purpose of this study was to test the validity of six dimensions of integrative learning that provide the conceptual foundation for the Integrative Knowledge Portfolio Process (IKPP) using data gathered from 620 students' who participated in the core activities associated with IKPP. The initial research questions addressed the following questions: Do students' responses to pre/post surveys that measure various aspects of integrative learning actually reflect the six dimensions proposed in the Integrative Knowledge Portfolio Process model? Do students' responses to these six dimensions vary according to their year in school, academic major/discipline, gender and race? Do important features of the learning environment influence students' gains on these dimensions?

The first major finding is that students who experienced the core activities associated with IKPP showed increases on the 37 items that measured various aspects of integrative learning. Moreover, the factor analysis showed that students' self-assessed gains on measures of integrative learning did reflect the six conceptual dimensions proposed by the authors.

The second major finding is that students showed significant gains on these six dimensions regardless of their academic major/discipline, race/ethnicity, gender, year in school, or the type of learning environment in which they engaged with the core activities of IKPP. This demonstrates that the Integrative Knowledge Portfolio Process shows significant promise for learners from a wide range of disciplines and backgrounds and that it can be used successfully across a range of disciplines as well as academic and co-curricular learning environments.

The third major finding is that students' gains on these six dimensions could be influenced by the larger learning environment. Increases on all six dimensions were more pronounced for those students who engaged more deeply with IKPP core activities (e.g., creating three or more Example of Work pages, engaging in Generative Knowledge Interviews, and creating Welcome and Goals pages) and participated in IKPP activities across multiple learning environments over time. These results demonstrate the students' gains on the six dimensions of integrative learning can most likely be enhanced by the creation of multiple course or learning environments that engage students with the Integrative Knowledge Portfolio Process.

The results also showed that overall, natural science and humanities students showed greater gains than the social science students on the six dimensions of integrative learning, and that these gains occurred in different dimensions (i.e., humanities students showed the greatest gains on the "become a more reflexive and relational learner" dimensions). Although it is not yet possible to draw conclusions with regards to how students from various major/disciplines may benefit differently from IKPP, these findings do provide a clear direction for future research.

These findings have implications for theory, practice, assessment, and research with regards to fostering integrative learning through the use of ePortfolios. Theoretically, these results offer educators and academic leaders a conceptual model that encompasses and expands upon the multiple dimensions of integrative learning the authors summarized from relevant literature (but previously had not been operationalized or empirically tested). At the very least, this conceptual model can serve as a starting point for groups of educators and faculty who are thinking about how integrative learning should be defined, implemented, and assessed within their own learning environments.

This work also has implications for integrative teaching, pedagogy, and curriculum design. The fact that gains on each of the six dimensions can be linked to students' engagement with the core activities of the Integrative Knowledge Portfolio Process represents a significant step forward in terms of understanding how specific integrative approaches can lead to different types of integrative outcomes. This is particularly true for the six dimensions of integrative learning in the IKPP Model. Furthermore, since the IKPP core activities have been validated with diverse learners across a variety of learning environments (including both traditional and non-traditional college students), the strength of these core activities seems to be quite promising. Given the fact that there is not yet any literature that explicitly connects how different types of integrative pedagogies lead to the development of particular types of integrative capacities in students, the authors believe that this study will be highly useful to those who are re-designing programs and curriculum.

Implications and Next Steps for Research

This study represents the first step within a much larger research effort that is focused on developing theory, identifying best practices, and creating effective assessment instruments for fostering integrative knowledge and lifelong learning across a wide range schools, disciplines and institutions. Although the sample size of this study was sufficient to validate the conceptual model that underlies the Integrative Knowledge Portfolio Process, we are cautious in terms of attempting to generalize about differences in students' learning based upon their major/discipline, or drawing conclusions about how different types of learning environments engaged with IKPP. For instance, even though the analyses of variance showed students having greater gains in some learning environments more than in others, emphasizing these differences can cloud the fact that even where the gains were the smallest, students still showed statistically significant increases on all six dimensions of integrative learning. Future research will focus on triangulating the results of this study with a qualitative analysis of students' portfolio content in order to understand more fully how students from various learning environments and majors/disciplines may benefit differently from IKPP.

Conclusion

In order to better prepare flexible, adaptive and creative people who can address the challenges of the 21st century, higher education institutions must become more integrative. Programs and curriculum must be re-designed so that students have more opportunities to reflect on, synthesize, and demonstrate the knowledge and skills they are gaining both within and outside of the classroom. Many educators believe that integrative ePortfolio-based learning is one way to address this need. However, as the literature demonstrates, creating integrative learning environments is not easy. One of the

most formidable barriers faculty and educators face is that very little is actually known about what "integrative learning" actually means, the best ways to facilitate it, the methods by which it should be evaluated, or the types of integrative capacities students can be expected to gain in response to integrative experiences. By providing an empirically validated conceptual model of integrative knowledge and learning through the use of ePortfolios, this work has begun to address these gaps.

References

AACU. *VALUE: Valid assessment of learning in undergraduate education*. Retrieved from http://www.aacu.org/value/.

Barrett, H. C. (2007). Researching electronic portfolios and learner engagement: The REFLECT initiative. *Journal of Adolescent & Adult Literacy*, *50*(6), 436-449.

Baxter Magolda, M. (1998). Developing self-authorship in young adult life. *Journal of College Student Development*, *39*(2), 143-156.

Biglan, A. (1973). The characteristics of subject matter in different academic areas. *Journal of Applied Psychology, 57*(3), 195-203.

Booth, A., McLean, M., & Walker, M. (2009). Self, others and society: A case study of university integrative learning. *Studies in Higher Education*, *34*(8), 929-939.

Bransford, J., Mosborg, S., Copland, M. A., Honig, M. A., Nelson, H. G., Gawel, D.,…Vye, N. (2009). Adaptive people and adaptive systems: Issues of learning and design. *Second International Handbook of Educational Change. Springer International Handbooks of Education, 23*(4), 825-856.

Cambridge, D. (2008). Layering networked and symphonic selves. *Campus-Wide Information Systems, 25*(4), 277-283.

Chen, H. (2009). Using eportfolios to support lifelong and lifewide learning. In D. Cambridge (Ed.), *Electronic portfolios 2.0: Emergent research on implementation and impact* (pp. 29-36). Sterling, VA: Stylus.

Clark, E. J., & Eynon, B. (2009). E-portfolios at 2.0--Surveying the field. *Peer Review, 11*(1), 18-23.

Conrad, D. (2008). Building knowledge through portfolio learning in prior learning assessment and recognition. *Quarterly Review of Distance Education*, *9*(2), 139-150.

Dewey, J. (1938). *Experience and education*. New York, NY: Macmillan.

Emirbayer, M., & Mische, A. (1998). What is agency? *The American Journal of Sociology, 103*(4), 962-1023.

Eynon, B. (2009). Making connections: The LaGuardia eportfolio. In D. Cambridge (Ed.), *Electronic Portfolios 2.0: Emergent research on*

Implementation and Impact (pp. 59-68). Sterling, VA: Stylus.

Fitch, D., Reed, B., Peet, M., & Tolman R. (2008). The use of eportfolios in evaluating the curriculum and student learning. *Journal of Social Work Education, 44*, 37-54.

Freire, P. (1972). *Pedagogy of the oppressed*. New York, NY: Herder and Herder.

Freshwater, D., & Rolfe, G. (2001). Critical reflexivity: A politically and ethically engaged research method for nursing. *Nursing Times Research, 6*(1), 526-537.

Garrison, J. W. (1995). Introduction: Education and the new scholarship on John Dewey. In J. W. Garrision (Ed.), *The New Scholarship on Dewey* (pp. 1-6). Dordecht, Netherlands: Kluwer Academic Publishers.

Graff, G. (1991). Colleges are depriving students of a connected view of scholarship. The *Chronicle of Higher Education*, *37*(22), A48.

Graff, G. (1992). *Beyond the culture wars: How teaching the conflicts can revitalize American education*. New York, NY: W. W. Norton & Co.

Huber, M. T. & Hutchings, P. (2004). *Integrative learning: Mapping the terrain*. Washington, DC: Association of American Colleges and Universities. New York, NY: Carnegie Foundation for the Advancement of Teaching.

Huber, M. T., Hutchings, P., Gale, R., Miller, R., & Breen, M. (2007). Leading initiatives for integrative learning. *Liberal Education*, *93*(2), 46.

Kirkpatrick, K., Renner, T., Kanac, L., & Goya, K. (2009). A values driven eportfolio journey: Na`waa. In D. Cambridge (Ed.), *Electronic portfolios 2.0: Emergent research on implementation and impact* (pp. 97-102). Sterling, VA: Stylus.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, N.J.: Prentice-Hall.

Labissiere, Y., & Reynolds, C. (2004). Using electronic portfolios as a pedagogical practice to enhance student learning. *Inventio, 2*(6). Retrieved from http://doit.gmu.edu/inventio/issues/Fall_2004/Reyn olds_1.html

Light, T. P., Sproule, B., & Lithgow, K. (2009). Connecting contexts and competencies: Using eportfolios for integrative learning. In D. Cambridge (Ed.), *Electronic portfolios 2.0: Emergent research on implementation and impact* (pp. 69-80). Sterling, VA: Stylus.

Mach, J., Burke, M., & Ball, J. (2008). Integrative learning: A room with a view. *Peer Review, 10*(4), 20-24.

Mahoney, S. L., & Schamber, J. F. (2008). The development of political awareness and social justice citizenship through community-based

learning in a first-year general education seminar. *Journal of General Education*, *57*(2), 75-99.

Melendez, B., Bowman, S., Erickson, K., & Swim, E. (2009). An integrative learning experience within a mathematics curriculum. *Teaching Mathematics and its Applications*, *28*(3), 131-144.

Mentkowski, M. & Associates (Ed). (2000). *Learning that lasts: Integrating learning, development, and performance in college and beyond*. San Francisco, CA; Jossey-Bass.

Newell, W. H. (1999). The promise of integrative learning. *About Campus*, *4*(2), 17-23.

Nonaka, I. & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford, UK: Oxford University Press.

Nussbaum, M. (2006). Education and democratic citizenship: Capabilities and quality education. *Journal of Human Development*, *7*(3), 385-395.

Pathways Report (2006). *How Student Leaders Make Sense of their Learning at the University of Michigan*. (unpublished manuscript discussing findings from focus groups with undergraduate student leaders) created by the Pathways Committee: a joint DSA/LSA committee focused on improving undergraduate education at UM**.**

Peet, M. (2006). We make the road by walking it: Critical consciousness, structuration and social change. Dissertation submitted for completion for a Doctor of Philosophy in Higher Education, University of Michigan.

Peet M. (2010). *The integrative knowledge portfolio process: A program guide for educating reflective practitioners and lifelong learners*. MedEdPORTAL.

Peet, M. (2011, accepted). Moving from crisis to opportunity: leadership transitions, tacit knowledge sharing and organizational generativity**.** Forthcoming *in Journal of Knowledge Management* (date, TBD).

Phillips, D. C. (1995). The good, the bad, and the ugly: The many faces of constructivism. *Educational Researcher*, *24*(7), 5-12.

Reynolds, C., & Patton, J. (in press). Case study: Can ePortfolios teach reflection? Strategies and solutions. In Cambridge, D. (Ed.). *E-Portfolio and global diffusion: Solutions for collaborative education*. Philadelphia: IGI Global.

Rhodes, T. (Ed.). (2010). *Assessing outcomes and improving achievement: Tips and tools for using rubrics*. Washington, DC: Association of American Colleges and Universities.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Seeley-Brown, A., & Adler, R. (2008). Minds on fire: Open education, the long tail, and learning 2.0. *EDUCAUSE Review, 43*(1), 16–32.

Smith, C. A., & Morgaine, C. (2004). Liberal studies and professional preparation: The evolution of the child and family studies program at Portland State University. *Child and Youth Care Forum*, *33*(4), 257-274.

Stuart, L., & Dahm, E. (2006). *21st century skills for 21st century jobs: A report*. Washington, DC: U.S. Department of Education.

Yancey, K. B. (2009). Reflection and electronic portfolios: Inventing the self and reinventing the university. In D. Cambridge (Ed.), *Electronic portfolios 2.0: Emergent research on implementation and impact* (pp. 5-16). Sterling, VA: Stylus.

Youatt, J., & Wilcox, K. A. (2008). Intentional and integrated learning in a new cognitive age: A signature pedagogy for undergraduate education in the twenty-first century. *Peer Review*, *10*(4), 24-26.

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Appendix A
Excerpt from an Example of Work Page

The page below, "Inspiring Involvement in Community Projects" is one of nine Example of
Work pages in the Work Showcase section of this student's Integrative Knowledge Portfolio.

The headings to the left circled in red are the four overarching Knowledge/Skill categories this student used to organize her 9 individual Example of Work pages (shown in blue under their respective knowledge/skill category). These Examples of Work pages are contained within the Work Showcase section of the portfolio (which is one of several major sections of the portfolio that are circled in green at the top of the page).

Appendix B
UM Integrative Learning Pre/Post Self-Assessment Survey Statements

Recognize personal strengths and challenges

1. I can identify my strengths and types of challenges (i.e. gaps in my knowledge) I encounter in specific learning or work situations (e.g. in writing a paper or doing a research project).
2. I make choices to enhance my strengths and address my gaps/challenges in specific work or learning situations (e.g. going to office hours when I am struggling to understand something).
3. I can provide evidence (i.e. in an essay, story, ppt., or ePortfolio) of how I have expressed my strengths and/or taken action to address my challenges in specific situations.

Identify personal values and beliefs

4. I can articulate specific examples of my personal values and beliefs (e.g. believing in values such as "self-motivation" or "contributing to the well-being other others).
5. I can identify examples of how my persona l values and beliefs influence my learning, decisions, and actions (e.g. in the subjects I have chosen to study, or the groups I chosen to join).
6. I can provide evidence (i.e. in a reflective essay, video, or an ePortfolio page) of how my personal values and beliefs have informed my decisions and actions.

Explore personal background, social identities, and perspective

7. I am aware that my background and social identities (e.g. my race, gender, nationality, social class, religion, sexual orientation, etc...) influence my perspective – how I see the world and make sense of things.
8. I can identify specific experiences (e.g. moments in my classes or in social situations) where I have learned about the strengths, limitations, and/or biases inherent in my own perspective.
9. I can provide evidence (i.e. within a reflection essay, ppt. or an ePortfolio page) of the knowledge3 and insights I've gained with regards to the strengths, limitations, and biases within my own perspective.

Work across social and cultural differences

10. I recognize how interacting with people from backgrounds and cultures different from my own enhances my work and learning.
11. I actively seek to understand the views of people with backgrounds and perspectives different from my own.
12. I can demonstrate (i.e. through stories, reflective, video, ppt. or an ePortfolio page) the specific ways I have sought out and learned from people with backgrounds, cultures, and/or perspectives different from my own.

Recognize knowledge and skills gained from different types of learning experiences

13. I understand that different types of knowledge and skills are gained from different kinds of experiences (e.g. in general, the knowledge/skills gained from taking an English class are

different from the knowledge/skills gained from work in an internship, or participating in a student organization, or sports team).

14. I can clearly identify the specific types of knowledge and skills I've gained from different learning and life experiences (from academic classes, paid work, personal challenges, leadership opportunities, etc.).

15. I can clearly demonstrate (i.e. through a reflective essay, video, ppt. or ePortfolio page) the specific types of knowledge and skills I've gained from a wide range of learning and life experiences.

Transfer and apply knowledge and skills to new contexts

16. I understand the need to connect knowledge I've gained from one place (e.g. the skills gained from participating on a sports team), to other situations (e.g. working with a group to solve a math or chemistry problem).

17. I can identify several different examples of how I have applied the knowledge or skills I've gained from one experience (e.g. learning to convey the essence of complex information for a science presentation), to other situations (e.g. creating an interesting web-site for a student organization).

18. I can provide evidence (i.e. though an essay, video, ppt. or an ePortfolio page) of the specific ways in which I have applied the knowledge/skills I've gained in one experience to other situations or contexts.

Work within my passion, interests, and sources of curiosity

19. I can clearly identify the passions, interests, and sources of curiosity that influence my learning, work and social life.

20. I have the habit of creating learning and/or professional goals that are informed by my passions, interests, sense of purpose, or sources of curiosity.

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

Develop an on-line professional identity

22. I understand the need to develop an on-line professional identity that is different from a typical Facebook, Linked-in, or MySpace identity (e.g. through the development of a professional web-page or an integrative ePortfolio).

23. I am taking steps to develop a professional on-line identity that demonstrates my knowledge, skills, values, goals and contributions to others (e.g. through a professional web-page or an integrative ePortfolio).

24. I am continually updating and expanding my on-line professional identity (i.e. through a personal web-page, or an integrative ePortfolio) in order to demonstrate my knowledge, skills, values, goals and contributions to others.

Work effectively in groups or teams

25. In a group or team situation, I pay attention to who is, and who is not, participating fully in the discussion and the activities of the group.

26. I ask questions and listen to others in order to understand if and how the needs, goals, perspectives, interests, etc.. of all group members are being addressed in the group's decision-making and activities.
27. I can provide evidence (i.e. through a story, video, ppt., letter of recommendation or an ePortfolio page) of the ways in which I have learned how to positively contribute to the functioning of a group or team.

Evaluate and modify my work

28. I can identify the standards that both myself and others will use to evaluate my learning and/or work (e.g. the criteria a professor or supervisor will use to assess my work as "excellent" "good" or "needs improvement").
29. I often reflect on if and how my work (academic and otherwise) is meeting my own standards and expectations.
30. I seek feedback on a regular basis in order to understand if and how my work (academic and otherwise) meets the needs, standards, and/or expectations of others.
31. I can demonstrate (i.e. through a reflective essay, feedback from supervisors, or as an ePortfolio page) how I have changed my perspective, decisions, or actions as a result of my own reflections or feedback from others.

Work with others to make a difference

32. I can work with others to identify a problem or need within a specific field, group, organization, or community (e.g. a school or non-profit organizations needing additional funds or resources in order to fulfill their mission).
33. I can work with others to develop a plan and take action in order to address the needs of a group, organization,   or community (e.g. creating a stable funding stream to support a non-profit organization in an on-going basis).
34. I can provide evidence (through a ppt., video, letters from others, or ePortfolio page) of how I have worked with others to identify and address a problem, need, or challenge within a group, organization, or community.

Engage in ethical decision-making and actions

35. I recognize the need to reflect on how my decisions and actions affect others (i.e. asking myself, "Do my decisions contribute to the overall care, well-being, or positive functioning of individuals, groups, organizations and communities that are a part of my life?").
36. I can identify specific moments or experiences where I have developed or practiced ethical principles (e.g. the principles of equity, justice, fairness, compassion, care, etc..) in my decision-making and actions.
37. I can provide evidence of decisions and actions where I have either developed, or expressed, one or more ethical principles (e.g. equity, justice, fairness, compassion, care, etc..) in the context of working with individuals, groups, organizations or communities that are a part of my life.

Appendix C
Factor Loadings Based on a Principle Components Analysis with Varimax Rotation with Kaiser
Normalization for 37 Items from the Pre-Post Survey (N=620)

Factor 1: Demonstrate knowledge gained within and across specific context

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I can provide evidence of the specific ways in which I have applied the knowledge/skills   .724
I've gained in one experience to other situations or contexts

I can provide evidence of the knowledge and insights I've gained regarding the strengths,   .713
limitations and biases within my own perspective

I can provide evidence of how I have worked with others to identify and address a   .667
problem, need, or challenge within a group, organization, or community

I can clearly demonstrate the specific types of knowledge and skills I've gained from a   .628
wide range of learning and life experiences

I can provide evidence of how I have expressed my strengths and/or taken action to   .625
address my challenges in specific situations

I can provide evidence of decisions and actions where I have either developed, or   .615
expressed, one or more ethical principles in the context of working with

I can provide evidence of how my personal values and beliefs have informed my decisions   .611
and actions

I can demonstrate the specific ways in which I have learned from people with   .601
backgrounds, cultures and perspectives different from my own

I can provide evidence of the ways in which I have learned how to positively contribute to   .530
the functioning of a group or team

I can demonstrate the knowledge/skills I've gained from pursuing an area of study, or   .513
engaging in a series of actions, that reflected my passions and interests

I can identify several different examples of how I have applied the knowledge or skills   .504
I've gained from one experience, to other situations

Factor 2: Recognize and adapt to differences	
I recognize how interacting with people from backgrounds and cultures different from my own enhances my work and learning	.753
I actively seek to understand the views of people with backgrounds and perspectives different from my own	.637
I can work with others to identify a problem or need within a specific field, group, organization, or community	.570
I understand the need to connect knowledge I've gained from one place to other situations	.556
I understand that different types of knowledge/skills are gained from different kinds of experiences	.525
I can work with others to develop a plan and take action in order to address the needs of a group	.507

Factor 3: Understand and direct oneself as a learner	
I can clearly identify the passions, interests, and sources of curiosity that influence my learning, work and social life	.671
I can identify my strengths and challenges I encounter in specific learning or work situations	.605
I have the habit of creating learning and/or professional goals that are informed by my passions, interests, sense of purpose, and/or sources of curiosity	.576
I make choices to enhance my strengths and address my gaps/challenges in specific work or learning situations	.527
I can see how my personal values and beliefs influence my learning, decisions, and actions	.513
I can articulate specific examples of my personal values and beliefs	.424
I can clearly identify the specific types of knowledge and skills I've gained from a different learning and life experiences	.400

Factor 4: Become a reflexive and relational learner

I ask questions and listen to others in order to understand if and how the needs, goals,   .611
perspectives, interests, etc. of all group members are being addressed in

I often reflect on if and how my work is meeting my own standards and expectations   .602

I seek feedback on a regular basis in order to understand if and how my work meets the   .599
needs, standards, and/or expectations of others

I can demonstrate how I have changed my perspective, decisions or actions as a result of   .500
my own reflections or feedback from others

In a group or team situation, I pay attention to who is, and who is not, participating fully   .494
in the discussion or the activities of the group

I can identify the standards that both myself and others will use to evaluate my learning   .427
and/or work

Factor 5: Identify and discern my own and other' ethics and perspectives.

.670

I am aware that my background and social identities influence my perspective-how I see
thing world and make sense of things.

I recognize the need to reflect on how my decisions and actions affect others   .571

I can identify specific moments or experiences where I have developed or practiced ethical   .545
principles in my decision-making and actions.

I can identify specific experiences where I have learned about the strengths, limitations,   .466
and/or biases inherent in my own perspective.

Factor 6: Developing a professional digital identity

I am taking steps to develop a professional on-line identity that reflects my knowledge,   .832
skills, values, goals and contributions to others

I am continually updating and expanding my on-line professional identity in order to   .809
demonstrate my knowledge, skills, values, goals and to others

I understand the need to develop an on-line professional identity that is different from a   .802
typical Facebook or MySpace identity

The Transformative Role of ePortfolios:
Feedback in Healthcare Learning

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This article reports findings of a study based in Scotland that explored healthcare learners' experiences of feedback and ePortfolios. Feedback is a highly complex, multi-dimensional phenomenon, and healthcare learners consider it essential for their learning, recognizing that without it patient safety may be compromised. This study sought to explore whether ePortfolios, with their dual emphasis on both the product and process of learning, could encourage deeper and broader learner engagement with feedback. Drawing upon three examples where ePortfolios have been embedded into the curriculum, our findings demonstrate that most participants were generally positive about using the ePortfolio to access, read, and store feedback on their assessments. In some cases where ePortfolio had been introduced across a program, a number of learners had also begun to use feedback provided through the ePortfolio as a springboard for reflection and planning for future development. However, many of our students missed the wider opportunities for long-term, regular creation of and engagement with feedback through the ePortfolio. After reviewing our implementation and using novel work based on threshold concepts, we propose the Personal, Learning and Thinking Skills (PLTS) framework as a guide to support deeper learner engagement with feedback.

Introduction

The aim of this article is to contribute to current debate and inform practice on how and in what ways an ePortfolio can be used to encourage learner engagement with feedback. We drawn upon research, funded by the United Kingdom's (UK) Higher Education Academy Subject Centre for Health Sciences and Practice, into learner experiences of feedback and ePortfolios at a new university in Scotland. First, we set the context of our study and demonstrate the significance of feedback with particular reference to learners in healthcare education. The ePortfolio is introduced as a tool to support both the product of learning as well as the process of learning. It is anticipated that this dual role will support more extensive engagement with feedback leading to deep learning. Next we outline the study design before giving three very different examples to illustrate where ePortfolios have been used to stimulate learner engagement with feedback within healthcare learning at the module and program level. Our findings regarding learner experiences of feedback and ePortfolios are then presented. Finally, after reviewing our implementation and using novel work based on threshold concepts, we propose the Personal, Learning and Thinking Skills (PLTS) framework as a guide to support deeper learner engagement with feedback.

In this study, we denote healthcare education to encompass learners in regulated professions such as nursing, medicine and the allied health professions whose primary goal is learner acquisition of clinical competence to ensure patient safety (General Medical Council, 2010; Health Professions Council, 2010; Nursing and Midwifery Council, 2010). Most undergraduate healthcare programs in Scotland consist

of four years of full-time study with master's programs requiring two years of full-time study or equivalent. A healthcare program consists of a number of discrete units of study referred to as modules.

The Significance of Feedback

Feedback is a highly complex, multi-dimensional, social phenomenon (Nicol, 2010; Poulos & Mahony, 2008; Sadler, 2010) supporting learning as well as increasing reflective skills and helping students to prepare for their future beyond the academic environment. Students vehemently believe in feedback, perceiving it to be essential for learning and progression (Burke, 2009; Rowe & Wood, 2008). Feedback is particularly significant for healthcare learners: failure to address feedback may impact directly upon the patient and could have severe or even life-threatening consequences (Price, Hopwood, & Pearce, 2000).

Healthcare learners develop cognitive, psychomotor, and affective skills during their studies, as well as the knowledge essential for their professional roles. Consequently, feedback provided to such learners will be highly complex but will always include an appraisal of current performance and an evaluation of competence. It is essential that students be prepared to receive such feedback, that they reflect upon it, and that they reconcile it with their theoretical learning (Croxon & Maginnis, 2009). However, feedback experiences for healthcare learners frequently occur in the clinical setting, and are thus more informal and less predictable than those in the traditional academic setting. Seminars and tutorials are relatively easy for the student and tutor to use for discourse about progress, planning, and signposting for self-appraisal, but in the busy clinical

Figure 1
The PebblePad ePortfolio
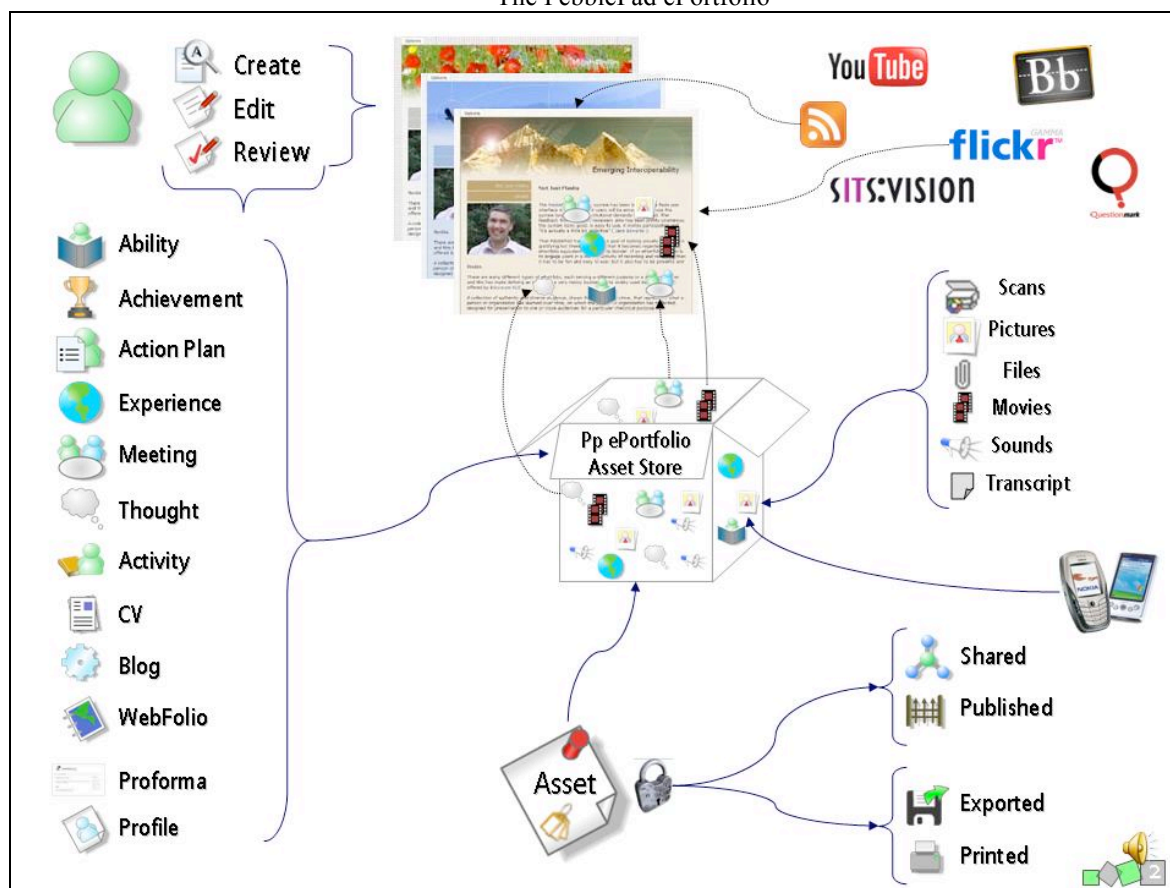
Figure 1. (© 2008, Pebble Learning Ltd. Used with permission.).

environment, patient workflow and service demands are prioritized, hence planned feedback sessions may be extremely limited and haphazard (Eraut, 2006; Wood, 2000).

Despite concern that learners neither collect nor respond to feedback (Wojtas, 1998), studies demonstrate consistently that learners collect feedback even if engagement is rather limited, such as checking through comments and content, skimming, "bearing in mind" comments for future work rather than being reflective and focusing on the development of meta-cognitive lifelong learning skills (Orsmond, Merry, & Reiling, 2005). Thus, our study stemmed from a need, in our role as educators, to support healthcare learners to engage more deeply with formative and summative feedback.

ePortfolios and Learning

In common with many institutions in the UK, ePortfolios have become integral to the learning landscape at Queen Margaret University (QMU), being

used in most healthcare subjects such as physiotherapy, nursing, and radiography. ePortfolio systems may vary across institutions, but within the technology a range of tools are normally available to the learner including blogs, online folios, online CVs, and online proformas (see Figure 1). The ePortfolio system used by students and faculty at QMU is PebblePad, a generic personal learning system initially developed by eLearning experts at the University of Wolverhampton. The range and flexibility of the tools within an ePortfolio can be implemented, for example, to support learning and teaching, encourage personal development planning, increase retention, and improve employability. Numerous examples are now available demonstrating the advantages of implementing an ePortfolio in many different scenarios (JISC, 2011; Strivens, Baume, Owen, Grant, Ward & Nicol, 2008).

Learners are often required to use an ePortfolio as part of their assessed academic work. In this case the tools used within an ePortfolio provide a digital repository evidencing learning. The ePortfolio in such examples is therefore: "...a purposeful aggregation of

Figure 2
Components of an ePortfolio System
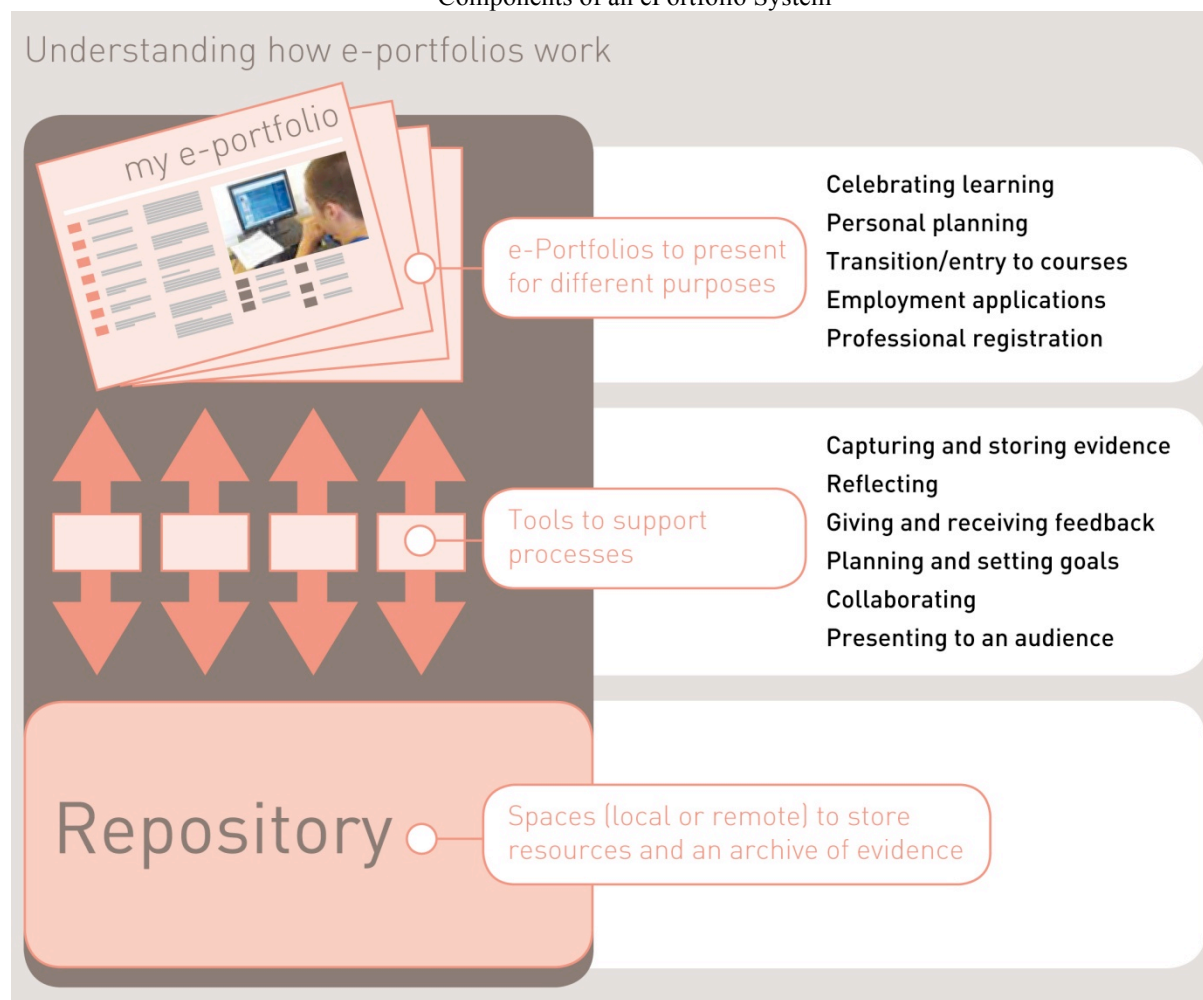
Figure 2. (© 2008, JISC infoNet. Used with permission.)

digital items - ideas, evidence, reflections, feedback etc. which 'presents' a selected audience with evidence of a person's learning and/or ability" (Sutherland & Powell 2007).

ePortfolios may also support the *processes* of learning including planning, sharing, and reflecting as well as the development of key meta-cognitive skills such as time management, group work, and critical awareness (JISC, 2008). Again, examples in a variety of subject areas are available (Centre for Recording Achievement, 2011). For healthcare education, the ePortfolio has much potential; for example, students may share reflections created in a blog in the ePortfolio on learning from placements with clinical educators, which leads to dialogue and then further reflection on current theoretical knowledge through the ePortfolio. The tool then supports learners to plan for future learning activities, which can test their emerging knowledge and skills. This dual purpose of the ePortfolio

(product and process) is captured diagrammatically in Figure 2.

ePortfolios and Feedback

The flexibility of the tools within the ePortfolio system and the dual foci of product and process have the potential to support deeper and more long-term engagement with feedback for healthcare learners. Primarily, the wide range of tools within an ePortfolio provide mechanisms for our learners in creating, capturing, collating, and reflecting on feedback from a variety of learning experiences and a number of sources: peers, clinical educators, tutors, and self (process of learning). All types of feedback (visual, textual, and audio) may be held within the ePortfolio, collated, and then returned to by learners as and when required and used as a basis for reflection on competence and professional development. The opportunities for sharing could also support on-going

Table 1
Focus Group Participants

Focus Group	Number of Participants	Age Range	Program	Year	ePortfolio Tool(s) Used	Type of Feedback
Pilot	3 [all female]	18-19 [mean = 18.3]	BSc Diagnostic Radiography	1	Blog; Webfolio with Proformas for clinical activity	Formative
1	5 [4 female; 1 male]	22 – 39 [mean = 30.8]	BSc Diagnostic Radiography	4	Blog; Webfolio with Proformas for clinical activity	Formative/ Summative
2	3 [all male]	40 – 44 [mean = 42.6]	BSc Diagnostic Radiography	2	Blog; Webfolio with Proformas for clinical activity	Formative
3	4 [3 female; 1 male]	26 – 32 [mean = 28.7]	BSc Diagnostic Radiography	3	Blog; Webfolio with Proformas for clinical activity	Formative & summative
4	7 [4 female; 3 male]	26 – 37 [mean = 30.3]	MSc Pre-reg Physiotherapy	2	Webfolio	Formative
5	6 [all female]	22 – 29 [mean = 23.8]	BSc Nursing	4	Webfolio	Summative
6	6 [all female]	21 – 24 [mean = 22.5]	BSc Nursing	4	Webfolio	Summative

dialogue with peers and supervisors (academic and placement) from wherever the learners may be physically located.

Secondly, ePortfolios may be used for the submission of assessments (product of learning) that draw upon evidence of the process of learning. The ePortfolio provides an ideal medium to return feedback to learners on the product of their learning. Such feedback could then be used for further learner reflection and dialogue. This should ultimately help our learners to reflect on their current learning, their achievements, and their competencies; and it should also serve to assist learners in planning for future learning opportunities that will help develop cognitive, psychosocial, and affective skills in preparation for their professional lives.

Building upon four years' experience of implementation of and research into ePortfolios at QMU (Peacock & Gordon, 2007; Peacock, Gordon, Murray, Morss, & Dunlop, 2009), we sought to establish a clear picture of how our learners actually engaged with feedback through ePortfolios and explore whether both roles of the ePortfolio (product and process) are utilized. This article provides an overview of the study's findings; full details are reported elsewhere (Peacock, Murray, & Scott, 2011).

Study Design and Methodology

This was a qualitative study: qualitative research is recognized as having the strength of generating rich data (Glazier, 1992) and involving an interpretive process (Mason, 1996). Employing a collective case study design, we were able to study, in-depth, three examples of where an ePortfolio had been integrated into healthcare education, at either module level (case study 1), or program level (case studies 2 and 3). Each case was selected purposefully on the basis of relevance to the focus of our study and enabled us to identify cohorts of healthcare learners who were using ePortfolio for assessment and feedback and who would encounter similar experiences of using this relatively new practice (Kitzinger 1995; Mays & Pope 1995). Ethical approval was obtained from the institution.

Methods of data collection included questionnaires and focus group activities. Tutors provided background information regarding the use of ePortfolios for feedback and assessment in each of the three case study areas via self-completion questionnaires. Data were gathered from learners regarding their preferences and experiences of feedback in general, as well as feedback with an ePortfolio, via six subject specific focus groups (Kitzinger, 1995). Participation in focus group sessions

Table 2
Use of ePortfolio in Case Study 1 - Nursing

Cohort and method of study	Module duration and assessment format	ePortfolio usage	ePortfolio induction approach	Support
n=35 female n=34 male n=1 Full-time	5 months (September – January) 4 hours per week - including facilitation and master classes. 1 summative assessment based on webfolio. 30 credits.	Using the webfolio tool, students develop an online portfolio which contains a critical commentary of their learning, linked to evidence of teaching/ facilitation, group dynamics and practice development which has been carried out throughout the module.	The concept of an online portfolio is introduced on day 1 of the module as an alternative means of assessing the students' learning on the module. ePortfolio induction took place on day 3 of module via a 2 hour, hands-on workshop session.	Pedagogical support provided through the facilitated learning taking place in the module – it is a problem based learning module where students identify knowledge gaps and then research to fill the gaps. On-going ePortfolio support was offered by the specialist group in the Centre for Academic Practice. A second optional support session prior to submission for assessment was also available. Documentation was provided about the content and structure of the webfolio. It was felt that no additional support was required other than this.

Table 3
Feedback Provision in Case Study 1 - Nursing

Type of Feedback	Feedback Provider	Feedback Location	Difference to Paper-Based Feedback	Advantages of Using ePortfolio for Feedback
Feedback on summative assessment	Two members of the teaching team External examiner	Individual comments in sections of webfolio Uploaded pro-forma on specified section of webfolio	No significant difference to feedback on paper-based portfolio	It was hoped that the students would look at feedback in relation to each section of the webfolio and that this would make it easier to contextualise feedback.

Table 4
Use of ePortfolio in Case Study 2 - Physiotherapy

Cohort and method of study	Course duration and assessment format	ePortfolio usage	ePortfolio induction approach	Support
Level 1: n=23 females n=17 males n= 6 Level 2: n=26 females n=17 males n=9 Full and part-time	2 years 1 summative assessment incorporating four formative assessments Credit weighted	Learners were encouraged to use the following tools within the system: • Webfolio • Thoughts • Experiences • Forms • Blogs	The idea of the ePortfolio and its role in professional and personal development was introduced to Level 1 within the first few weeks of semester. Tutors provided exemplars of webfolios and links to the assessment. A hands-on induction workshop was provided by the Centre for Academic Practice (CAP).	Lectures on reflection, PDP and development of portfolios were provided as well as optional weekly drop-in sessions available for students with queries on using ePortfolio. Additional ePortfolio support was available through specialist group in CAP. Extensive documentation was provided about the purpose of the ePortfolio, the formative tasks and the final assessment.

was invited from the three healthcare subject area cohorts: Nursing (n=35); Physiotherapy (n=49); and Diagnostic Radiography (n=72). Three students were recruited from the level 1 Diagnostic Radiography cohort (n=36) to participate in the pilot focus group; these students were female. An invitation to participate in subject specific focus group sessions was extended to all students within the specified levels of the three healthcare subject areas. Recruitment was initially carried out in person by a member of the project team; further recruitment was initiated via targeted email invitations and also through the cooperation of subject tutors. The total number of students who actually participated was 31 (female n=23, male n=8): approximately 20% of the overall sample.

An inductive and interpretive analysis process was employed. Data were interrogated iteratively by the project team, enabling both the value as well as any shortcomings of ePortfolios for feedback to be identified, and recognizing that a range of learner experiences was possible. As researchers we were interpreting experiences from the point of view of the individuals involved and, therefore, constructing knowledge. Basic demographic data and program details for each group are outlined in Table 1.

Case Studies in Healthcare Education

It was anticipated that in our case studies learners would use the ePortfolio to develop a more informed sense of their cognitive, psychomotor, and affective skills and achievements through deeper and more extensive engagement with feedback. Learners were all introduced to the ePortfolio as an assessment tool (product of learning) and to support the processes of learning; the three assessments all required evidence of the processes of learning. In all three of the case studies there was a hope, often articulated by tutors, that some students would use the ePortfolio to generate self-feedback as well as collecting, storing, collating, and reflecting on feedback provided by peers, clinical educators, and tutors across their program of study and that this would lead to deep learning. In the latter two case studies there was a strong emphasis upon comprehensive utilization of the ePortfolio throughout the program of studies, as well as its role in continuing professional development (CPD) after graduation and into employment in the healthcare professions. Learners at QMU have access to the ePortfolio system after graduation and can use the tool to support CPD in their professional roles.

Case study 1: Bsc (Honours) Nursing. The first case study was drawn from the final year of a four-year nursing undergraduate program. Learners undertook the module "Preparation for Clinical Leadership," which is designed to encourage the integration of theory and practice of managing change, leadership, and teaching and learning approaches. Thus, the module prepares final year nurses for their future role in the U.K.'s National Health Service (NHS) in managing change and teaching various levels of staff, students, and patients/clients. Learners submit an online commentary in the form of an online folio for their summative assessment - the *product* of their learning. However, this commentary is linked to a variety of examples that evidence the *process* of their learning throughout the module. Table 2 illustrates ePortfolio usage in this case study.

Summative feedback was supplied by two tutors and took the form of online comments on specific sections of the online folio, and in some cases further feedback was provided via an online proforma. The aim of the feedback was to inform students of their performance in terms of their learning, with emphasis on the linking of their evidence in the portfolio to their learning commentary. The module focused on the process of learning rather than knowledge production so the tutors wanted to see specifically how the students were using and synthesizing their learning. It was hoped that the students would engage more fully with the feedback provided on the online folio since it was linked to specific sections of the online folio and because the module emphasized the importance of using feedback as a springboard for reflection and planning for future learning. Table 3 illustrates feedback provision in this case study.

Case study 2: MSc (pre-registration) Physiotherapy. The second case study focused on learners in both years of an MSc (pre-registration) Physiotherapy program: a two-year program for science graduates who wish to pursue a career as a physiotherapist. Here the ePortfolio was used not only for assessment submission but also to support reflection and personal development planning, linked to professional studies, as advocated in much tutor guidance about ePortfolios (JISC infoNet, 2008; Peacock et al., 2009). Students were required to use an ePortfolio for both Professional Studies and Practice-Based Learning modules with the aim being to support students in developing a reflective approach to learning, both in and out of the practice setting. The ePortfolios in these modules were used as a space where the learners could link all aspects of their learning including feedback in one place. An overview of the module and ePortfolio usage in this case study is presented Table 4.

Table 5 provides an outline of feedback provision through ePortfolio for the physiotherapy learners. In this case, it was specifically and repeatedly articulated to learners to use feedback

Table 5
Feedback Provision in Case Study 2 - Physiotherapy

Type of feedback	Feedback provider	Feedback location	Difference to paper-based feedback	Advantages of using ePortfolio for feedback
Feedback on formative and summative assessments at the end of semesters 2, 3 and 6	Tutors NB: Students were encouraged to share their reflections in the blog tool with their peers for support and formative feedback.	Comments provided on formative assessments. Summative feedback was provided through uploaded pro-forma. The feedback provided through the webfolio is similar to that provided on paper-based portfolio and if appropriate students can request a one to one session with tutors. In the future, it is hoped to extend feedback to include audio feedback.	No significant difference to feedback on paper-based portfolio.	It was hoped that the students would look at feedback in specific sections to focus on areas where they needed to improve. It was easier to provide feedback through the ePortfolio than through central administration at the institution. Tutor independence in setting up and organising the online assignment dropbox.

Table 6
Use of ePortfolio in Case Study 3 - Radiography

Cohort and method of study	Course duration and assessment format	ePortfolio usage	ePortfolio induction approach	Support
Level 1: n=36 Level 2: n=31 Level 3: n=22 Level 4: n=19 Full-time	4 years Levels 2 & 3 – 600 hours: Tutorials 30hrs; Clinical Practice + Reflective Practice + Independent Learning 570hrs. Level 4 – 600 hours: Workshops 10hrs; tutorials 20hrs; Clinical Practice + Reflective Practice + Independent Learning 570hrs. 1 summative ePortfolio assessment per level. Level 2, 3 and 4: 60 credits per module. 'Mark' comes from the staged assessments; ePortfolio is pass or fail, no specific credit awarded.	Webfolio with proformas for clinical activity – learners were provided with template to copy and adapt Blogs In addition, learners were encouraged to explore and use any tools appropriate for personalisation.	*Level 1* The concepts of reflection and PDP were introduced early in Semester 1 to first year students as part of their Professional Practice module although these are specifically not assessed in this module. Lecturer using PowerPoint presentation to discuss these key concepts. A hands-on, workshop introduction was also provided to demonstrate all of the tools of the ePortfolio system to the students (although it was not expected that they would use all of the tools). The aim was to encourage students to explore the ePortfolio system and select the tools that they wished to use and which were most appropriate for their learning style. *Level 2- 4* Students were provided with top-up sessions about ePortfolios, reflection and PDP and then offered drop-in sessions.	In the early stages (level 2 particularly), additional practical technical support was required by some students; this is because there is little time for the students to explore the tool at leisure. This additional support was offered either on a one-to-one basis or in very small (2 or 3) groups by the tutor. Some students also attend workshops run by the CAP to enhance their skills. Support was required to enable students to develop skills of reflection and reflective writing and the concept of evidencing clinical activity. This was provided by the tutor and students were also encouraged to seek the help of the Learning Support department. Extensive documentation was provided about the purpose of the ePortfolio and how to use the system.

Figure 3
Example of an Online Portfolio for a Radiography
Student Together with Feedback Dialogue Between Tutor and Student

Figure 4

Example of Online Folio Where the Radiography Student has Identified Personal
Learning Needs, Learning Outcomes, and an Action Plan for the First Year in Employment

as a springboard for reflection and planning of future learning experiences throughout their program of studies and this would then support them in engaging with CPD throughout their professional lives.

Case study 3: BSc (Honours) Diagnostic Radiography. The third case study focused on learners in the second, third, and fourth year of their studies in an undergraduate program who undertake clinical practice in diagnostic imaging modules for these respective levels. Clinical education placements have a theoretical as well as a practical focus, providing opportunities for students to develop, evaluate, organize, and build upon academic learning in a progressive fashion. Here the ePortfolio was again used not only for assessment submission (product of learning) but also to support reflection and personal development planning linked to professional studies (process of learning). The ePortfolio system was primarily used to develop the skills required for students to reflect upon their learning in the clinical environment and to demonstrate the ability to link theory with practice. Learners can build and maintain a robust record of their clinical activity and their learning by linking additional evidence of learning to their reflective accounts throughout their final three years. Again tutors explained on a regular basis the role of the ePortfolio in collating and reflecting on feedback. Table 6 demonstrates ePortfolio usage in case study

three. Figure 3 illustrates tutor and student dialogue around a blog entry, and Figure 4 provides an example of an online folio where the radiography student is identifying personal learning needs and learning outcomes and has developed an action plan.

Extensive, written formative feedback is provided at least once, and often twice, on draft online folios, using the comment tool in the ePortfolio system as illustrated in Figure 4. Typically, feedback focuses on the quality of the writing, descriptive content, identification of key learning experiences, level of reflection, and degree of evaluation of practice. Additional evidence of learning presented by the student is also scrutinized and comments are provided on its value. Students are asked to acknowledge and respond to the feedback, using the comment tool, and to retain these comments as part of the summative assessment. This creates a record of tutor/learner interactions and allows the tutor to see whether changes and improvements have been made to work when it is next reviewed. It also allows the tutor to identify those students who do not engage with the process and are likely to be unsuccessful and thus need additional support. Table 7 provides a summary of the feedback process through ePortfolio in this case study.

Results

In all three case studies, learners reported significant and in some cases repeated engagement with
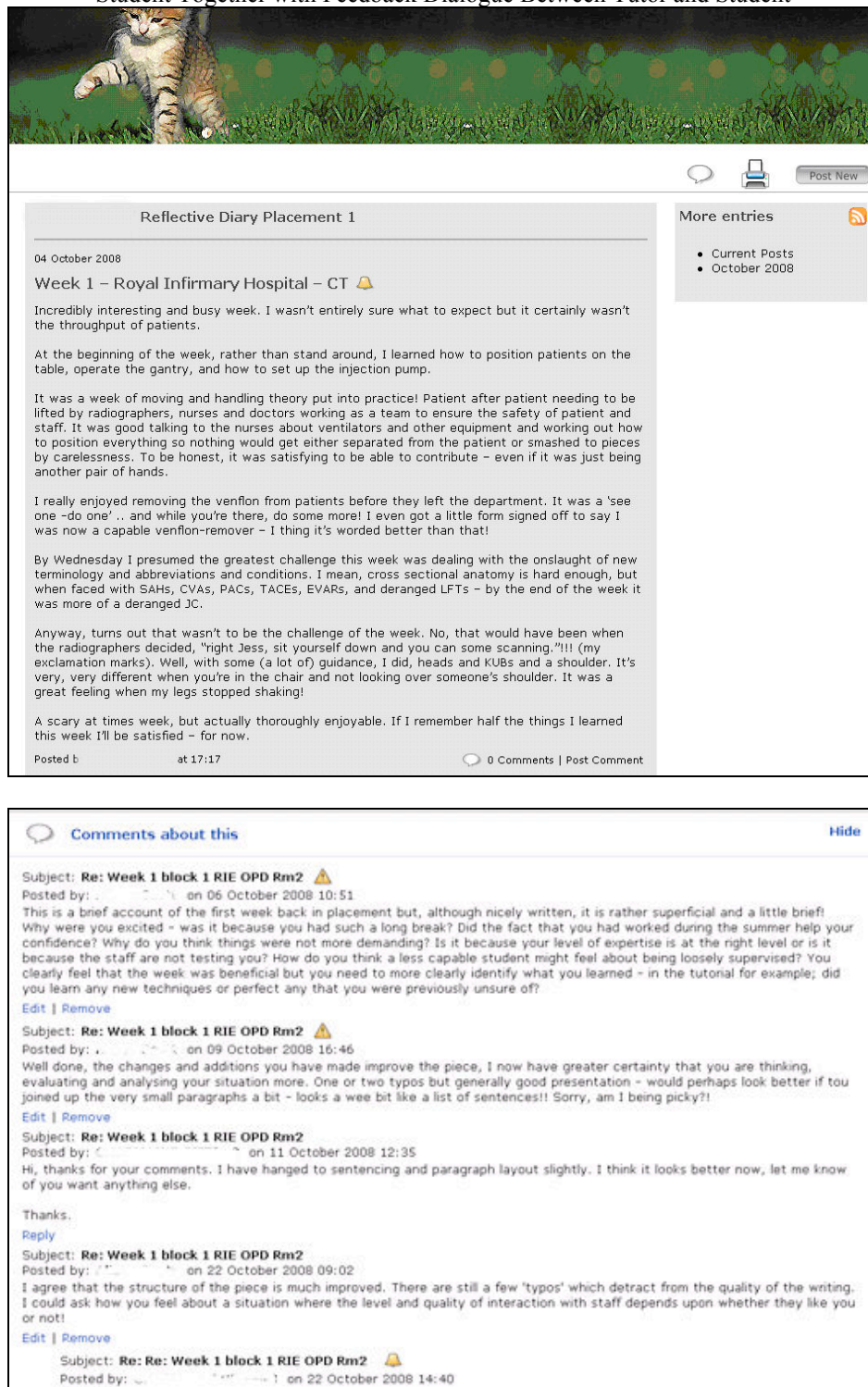
Table 7
Feedback Provision in Case Study 3 - Radiography

Type of Feedback	Feedback provider	Feedback location	Difference to paper-based feedback	Advantages of using ePortfolio for feedback
Feedback on formative and summative assessment	All formative and summative feedback provided by a single lecturer. Double marking performed by second lecturer. Feedback printed for the external examiner to scrutinise and ePortfolios made available for the external to review. Learners were shown how to share their webfolios with peers and encouraged to work collaboratively and provide feedback. However, not all learners opted to use this facility, preferring to engage in an internal reflective dialogue. Others liked to share with peers and the comments and feedback provided were recorded on the webfolio and could be viewed during the assessment process	For formative feedback, comments were made on individual assets - for example, on individual thoughts in a blog. For the summative assessments one comment was attached to the 'front page' of whichever tool the student used. However, when uploading to the online assessment drop-box, some students neglected to allow the comment facility on their webfolio so that the tutor could make the comments on the activity log webfolio. A webfolio template was provided for them to copy from a gateway and always carried a comment facility.	It is always easier and quicker to provide feedback to individual students face-to-face; however, the comments in ePortfolio are a permanent record of their progress and can be reviewed repeatedly if required. If a student does not understand the feedback provided or does not know how to make changes, there is an expectation that learners will request a face-to-face meeting. Ultimately the ePortfolio has not changed the way that students respond to feedback.	Providing extensive, personalised feedback (written) on portfolios to students, with face-to-face meetings if required, is essential. The ePortfolio can be reviewed and assessed from anywhere.

Table 8
Form of Engagement with Feedback and Frequency Reported

Focus group cohort	Reading feedback	Reviewing feedback	Questioning feedback
Radiography 2	13	0	0
Radiography 3	6	1	0
Radiography 4	4	0	0
Physiotherapy	10	0	0
Nursing 1	4	3	0
Nursing 2	11	2	5

tutor feedback delivered on the product of their learning through ePortfolios such as skimming, reading, saving, or storing feedback (see Table 8). Some learners, notably the radiography cohort, reported more novel and extensive means of engaging with feedback delivered through ePortfolio, such as responding to feedback using the comment function within the tool, thereby creating a personal, electronic dialogue with their tutor: "I quite like the fact that if there's one specific issue you can generate a dialogue and I would never have done that with a paper-based feedback" (radiography student). There was some limited evidence of learners starting to generate, collect, collate, and reflect on feedback in the ePortfolio and using it as a springboard for the development of meta-cognitive skills and planning of future learning opportunities.

Perceived Benefits of Feedback and ePortfolio

In the focus groups, learners tended to focus on the benefits of receiving feedback through the ePortfolio on their summative assessments (product of learning). They were generally very positive and cited many advantages, including constant availability, ease of access, improved organization and security of materials and personalization of feedback:

- ...to go back and find it if we needed it would be a lot easier if it was all in a file on a computer. (physiotherapy student)
- Much easier to access. Much easier to read! You can't lose it! (nursing student)
- …it certainly feels more personalized, it's been read and analyzed. (radiography student)

Learners were particularly positive about the availability of the feedback with the assignment:

- It's with the work, so it's easy to see mistakes being talked about. (radiography student)
- Good, more structure feedback. You can see what and where the assessor has guided you. (nursing student)

Further benefits identified included environmental factors such as reduced printing and digital notification of when feedback was available.

Perceived Barriers to Feedback and ePortfolio

Again, participants focused on receiving feedback on their summative assessments in the ePortfolio. Noted barriers focused on the system and its robustness as well as concern about data protection and general reliability. Other technical issues raised by a minority of learners included access to the correct version of software and timing out of system sessions. Inevitably learners were concerned about the time taken to learn how to use the system and being able to access feedback quickly:

- The thing is about basically finding how it works... because it's a software, you actually have to go in and play around, spend a lot of time, see how it really works and then start doing things with it. (physiotherapy student)
- Takes longer, reading each comment, I do prefer feedback on one form that is easy to look over again. (radiography student)

While the ePortfolio had the potential to support further and more diverse engagement with feedback, some learners found the wide-range of options available in the ePortfolio tedious and were further confused by the obscure terminology within the system.

Discussion

Our study originated from an acceptance that feedback is vital for learning; however, in healthcare programs feedback can be complex and provided in less than ideal circumstances. It was hoped that the affordances of the ePortfolio system would encourage greater learner engagement with and learning from feedback, which has to date been found to be problematic.

Our participants were very positive about receiving tutor-generated feedback on the product of their learning through the ePortfolio (the summative assessment): it was much easier and quicker to access and to return to this feedback compared with paper-based feedback, which is often lost. Some learners did indeed return to feedback in the ePortfolio more than once and read it, especially when prompted by tutors and after they had been introduced to the ePortfolio as a tool for long-term professional and personal development. Those that did return to feedback (usually in case studies 2 and 3) often reflected upon it, used it as a springboard for internal reflective or external dialogue, and planned for future learning activities. The wider role of the ePortfolio as a tool to self-generate feedback or to collate, collect, and reflect on feedback by learners across a program was, however, infrequently considered and used by learners.

Through our research it became apparent that learner engagement with the ePortfolio for both purposes (process and product of learning) was linked to their understanding of what feedback was and what they believed to be their role within the feedback process. Feedback was often seen as a type of response to a learner's action – an error correction – providing

Figure 5
PLTS Framework

Figure 5. © 2011, JISC infoNet. Used with permission.

specific information about the level of progress to date (linked to the grade this indicates whether they were on the right track and if they had met the appropriate standards) as well as areas for improvement about the specific task, outlining their strengths and weaknesses and offering signposting for improvement.

- …because otherwise you would just be trouping on without any sort of way to gauge how you were doing, how you were … you could be going completely off in the wrong direction, and you need someone to say 'hang on a second, go this way' …and direct you a little I suppose. (radiography student)
- If they didn't evaluate our work then we will never improve, it's better to enhance it from now than to be in the field and don't know how to do it. (radiography student)

However, there appears to be little learner understanding of the complexity of feedback and especially its role as a tool for the development of meta-cognitive skills and self-regulation to support lifelong learning. This understanding of feedback is combined with a passive perspective of the learner's role in the process: feedback is something that should be provided to them as part of their implicit agreement with the tutor and the institution but there is little understanding of what to actually do with feedback once received (Middleton, Nortcliffe, & Owens, 2009).

Our findings concur with emergent research into effective ePortfolio implementation, which emphasizes that ePortfolios must be integrated into the curriculum with full technical and pedagogical support available for learners and tutors (Joyes, Gray, & Hartnell-Young, 2009). These approaches address some of the misconceptions associated with ePortfolios, for example, that as "digital natives" (Bennett, Maton, & Kervin, 2008), learners instinctively know how to use new technology and to use it to further their learning. More examples that are pertinent to this study are shown in Table 9 (Joyes, Gray, & Hartnell-Young, 2009). ePortfolio implementation is a highly complex area and there are key threshold concepts that are central to their success. Although this is a novel body of knowledge that is still in development in relation to ePortfolios, we have applied this to our implementation in order to understand both the successes and the challenges of our implementation and as a basis for future discussions with tutors (JISC infoNet, 2011). Table 9 shows how four of these Threshold Concepts relate to the practice described in this paper.

After reviewing our implementation it became apparent that most learners need guidance in how to use their ePortfolio to support deep learning from feedback. The PLTS framework (see Figure 5), based on Kolb's cycle of experiential learning (JISC infoNet, 2008) provides an ideal guide to help learners not only engage with feedback provided by tutors on the product of learning but also to help learners reflect on the process of learning in which they will receive and create much feedback.

Using this cycle, tutors may demonstrate to learners how the ePortfolio can be used to:

Table 9
An Analysis of ePortfolio Implementation with Regard to Threshold Concepts

Threshold concept	General misconceptions	Approach taken by QMU	Area for development
1. *Purpose*			
The purpose(s) of the ePortfolio must be aligned to the particular context. Purpose in this context is 'Supporting reflection and feedback'	Users will work out how to use ePortfolios to suit their needs.	Purpose made clear and directly related to professional practice, by tutors, at the start of the module.	Although tutors articulated the purpose of the ePortfolio to support both the product and process of learning, most of the learners used their existing approaches to feedback and hence used the ePortfolio mainly as a feedback delivery tool (product).
2. *Learning Activity Design*			
There must be a conscious design and support of learning activities.	The curriculum remains unchanged.	Scaffolding and support for tutors and learners. ePortfolio use integrated into program.	Although the ePortfolio had been integrated into the curricula, its implementation focused on the product of learning. More learner guidance is required to ensure the ePortfolio is used to support deeper learning from feedback.
3. *Processes*			
The processes involved in the creation of the ePortfolio in this context must be understood and both technical and pedagogic support needs to be provided.	Students are digital natives so easily able to adopt new technologies and know how to use in their studies.	Full technical and pedagogical support available for both learners and tutors.	Learners and tutors had technical support but more holistic support is required to help develop a wider understanding of the potential for ePortfolio and feedback for the processes of learning.
4. *Transformative and Disruptive Nature*			
ePortfolios are disruptive from a pedagogic and technological perspective.	An ePortfolio can simply replace a paper-based system.	Tutors encouraged learners to not only read feedback but reflect and plan for future learning opportunities. The ePortfolio was introduced as a wider tool for engagement with feedback.	Learners reverted to comfortable and tried and tested approaches to feedback. Only with significant tutor support could familiar patterns of working be transformed.

- Record, collect, and collate feedback. This may be feedback provided by tutors on work published through the ePortfolio. Alternatively it may be feedback provided verbally on placements or text-based feedback on other assignments in their studies.
- Synthesize learning from feedback. Healthcare learners are given feedback in many different learning environments. The ePortfolio system can not only store this but also help learners to review and then link to learning and synthesis.
- Reflect on this feedback from many different sources. This provides the opportunity for learners to consider how feedback impacts their current theoretical knowledge and their emerging skills and competencies.
- Organize and plan for future learning opportunities.

It is anticipated that this model would help learners to develop a wider understanding of feedback and its complexity and purpose in their learning.

To benefit from this model, learners will also need guidance in becoming more active agents in the feedback process – the transformative role of the ePortfolio. Many of our learners did not envisage that they had more than a "recipient" role in the feedback process (it was something provided to them); therefore, they could only visualize ePortfolio as an electronic delivery system of their entitled feedback on the product of their learning. In healthcare education, learners need to be proactive in not only ensuring they receive feedback but also in seeking out feedback from as many sources as possible; further, they must use this feedback for reflection on both the product and processes of learning. Peer feedback and support is an important part of professional practice, and encouraging this as part of the programs could enable learners to better understand the role of feedback in their studies. The model may also support tutors in designing learning activities to encourage learners to embed feedback into their learning.

Limitations of the Study

Limitations of this study relate to participant recruitment, research tool design, and timing of the study, as well as some technical difficulties with the institution's installation of QSR NVivo8, a software tool for aiding qualitative analysis, which resulted in much of the analysis stage being conducted manually by the team. These issues are discussed in more detail elsewhere together with our recommendations for future studies (Peacock et al., 2011).

Conclusion

Through our small collective study we have sought to build a rich picture of learner engagement with feedback and ePortfolio. Our research indicates healthcare learners are cognizant of the importance of feedback in their learning, but their current models of feedback, and moreover how to interact with it, frequently impede the effectiveness of the ePortfolio in supporting deep learning from feedback. Nevertheless, in a few cases where ePortfolios had been integrated across a program and appropriate tutor guidance had been provided, a small number of learners had begun to use feedback provided through the ePortfolio as a springboard for deeper learner and planning for future development. Moreover, a few learners had started to explore the ePortfolio tool to support the process of learning. Clearly most learners need guidance and models to ensure they benefit from feedback and use

the ePortfolio effectively for on-going personal and professional development. As educators we are still in the formative stages of our implementation of ePortfolios and further research is required to explore its future roles especially regarding feedback. Even so, the ePortfolio has the potential to change radically the ways in which feedback is given to learners and how they use this feedback to support their deeper understanding of their subject and practice in healthcare.

References

Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology, 39*(5), 775-786.

Burke, D. (2009). Strategies for using feedback students bring to higher education. *Assessment and Evaluation in Higher Education, 34*(1), 41-50.

Centre for Recording Achievement (2011). *Higher education case studies*. Retrieved from http://www.recordingachievement.org/higher-education/case-studies.html.

Croxon, L., & Maginnis, C. (2009). Evaluation of clinical teaching models for clinical practice. *Nurse Education in Practice, 9*(4), 236-243.

Eraut, M. (2006). Feedback. *Learning in Health and Social Care, 5*(3), 111-118.

General Medical Council. (2010). *The medical register*. Retrieved from http://www.gmc-uk.org/doctors/medical_register.asp

Glazier, J. D. (1992). Qualitative research methodologies for library and information science: An introduction. In J. D. Glazier, & R. R. Powell (Eds.), *Qualitative research in information management* (pp.1-13), Englewood, CO: Libraries Unlimited.

Joyes, G., Gray, L., & Hartell-Young, E. (2009). *Effective practice with e-portfolios: How can the UK experience inform practice?* Retrieved from: http://www.ascilite.org.au/conferences/auckland09/procs/joyes.pdf

Health Professions Council. (2010). *Registered Health Professionals*. Retrieved from http://www.hpc-uk.org/

JISC (2011). E-portfolios: JISC projects. Retrieved from http://www.jisc.ac.uk/whatwedo/programs/elearning/eportfolios/jiscprojects.aspx

JISC infoNet. (2008). *E-portfolios. Learner perspectives*. Retrieved from http://www.jiscinfonet.ac.uk/infokits/e-portfolios/learner

JISC infoNet (2011). *Preparing for success*. Retrieved from http://www.jiscinfonet.ac.uk/infokits/e-portfolios/preparing-success

Kitzinger, J. (1995). Qualitative research: Introducing focus groups. *British Medical Journal, 311*, 299-302.

Mason, J. (1996). *Qualitative researching.* London: Sage.

Mays, N., & Pope, C. (1995). Qualitative research: Rigour and qualitative research. *British Medical Journal, 311*(6997), 109-112.

Middleton, A., Nortcliffe, A., & Owens, R. (2009). *iGather: Learners as responsible audio collectors of tutor, peer and self reflection*. Retrieved from http://research.shu.ac.uk/lti/awordinyourear2009/docs/Middleton-Nortcliffe-Owens-iGather_final.pdf

Nicol, D. (2010). From monologue to dialogue: Improving written feedback processes in mass higher education. *Assessment and Evaluation in Higher Education*, *35*(5), 501-518.

Nursing and Midwifery Council. (2010). *Search the register.* Retrieved from http://www.nmc-uk.org/Search-the-register/

Orsmond, P., Merry, S., & Reiling, K. (2005). Biology students' utilization of tutors' formative feedback: A qualitative interview study. *Assessment and Evaluation in Higher Education, 30*(4), 369-386.

Peacock, S., & Gordon, L. (2007). *Final report for ISLE project, section 5.1: Identification of staff training needs and development of staff program*. Edinburgh, UK: Queen Margaret University.

Peacock, S., Morss, K., Scott, A., Hislop, J., Irvine, L., Murray, S., & Girdler, S. T. (2009). Using ePortfolios in higher education to encourage learner reflection and support personalised learning. In J. O'Donoghue (Ed.), *Technology-supported environments for personalized learning: Methods and case studies* (pp.185-211), New York, NY: Information Science Reference.

Peacock, S., Gordon, L., Murray, S., Morss, K., & Dunlop, G. (2010). Tutor response to implementing an ePortfolio to support learning and personal development in further and higher education institutions in Scotland. *British Journal of Educational Technology*, *41*(5), 827-851.

Peacock, S., Murray, S., & Scott, A. (2011). *Exploring the learning experience of ePortfolios for formative and summative feedback in the healthcare professions*. Edinburgh, UK: Queen Margaret University.

Poulos, A., & Mahony, M. J. (2008). Effectiveness of feedback: The students' perspective. *Assessment and Evaluation in Higher Education*, *33*(2), 143-154.

Price, R., Hopwood, N., & Pearce, V. (2000). Auditing the clinical placement experience. *Radiography, 6*, 151-159.

Rowe, A. D., & Wood, L. N. (2008). Student perceptions and preferences for feedback. *Asian Social Science*, *4*(3), 78-88.

Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal. *Assessment and Evaluation in Higher Education, 35*(5), 535-550.

Strivens, J,, Baume, D., Owen, C., Grant, S., Ward, R., & Nicol D. (2008). *The role of e-portfolios in formative and summative assessment.* Retrieved from http://www.heacademy.ac.uk/resources/detail/ourwork/evidencenet/jisc_cra_role_of_eportfolios

Wojtas, O. (1998). Feedback? No, just give us the answers. *Times Higher Education Supplement,* Retrieved from http://www.timeshighereducation.co.uk

Wood, B. P. (2000). Feedback: A key feature of medical training. *Radiology, 215*, 17-19.

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Promoting Self-regulation and Critical Reflection
Through Writing Students' Use of Electronic Portfolio

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The role of reflection in the learning process has taken on new significance in a digital environment. The potential of using innovative teaching methods to prompt first-year writing students to self-regulate learning behaviors and write more critical reflection statements when using electronic portfolios was studied over eight fall semesters. Results showed that using student surveys and focused in-class discussion in conjunction with consistent ePortfolio assignments not only dramatically increased the length of reflection statements written but also the depth of thinking shown in those statements. These results demonstrate the effectiveness of using intentional instructional strategies for helping students develop self-regulation and critical reflection skills.

The notion of reflection and its importance to learning has been recognized and discussed for decades. Kitchenham's (2008) recent article traces the development of Mizerow's transformative learning theory, a key component of which is reflection, beginning in the late 1970s and continuing for more than 35 years. In the early to mid-1980s the discussion evolved through foundational work by Schön (1982) and Kolb (1984). However, this well-established concept took on new importance when technology made it possible for reflection to occur in a digital environment. Irvin's (2004) "Reflection in the Electronic Writing Classroom" states that despite all the attention reflection has received, "little has been written explicitly on the role of reflection in the electronic classroom" (para. 2). Irvin notes that the most complete look at reflection and writing, Yancey's 1998 *Reflection in the Writing Classroom*, ends by posing the then unanswered question of how conducive an electronic environment would be for student reflection and what difference a more public arena would make in fostering such reflection. Since that time, the "electronic environment" has been increasingly dominated by the use of electronic portfolios, and, as Cambridge (2010) notes, "Traditionally reflection has been a key component of portfolios . . . " (p. 25). Despite the attention paid to the importance of reflection to learning, however, little is found on how to elicit excellent reflection from our students. Granted, resources such as Barrett's (2011) well-documented web site provide a wealth of information concerning portfolio use, including a link to a site devoted to reflection. However, examining such resources can still leave us wondering: What do I actually *do* in the classroom to promote critical reflection for learning?

The answer to this question took on particular significance for me in 2001, when we began requiring that all first-year writing students use the university's electronic portfolio system to document their learning. The developers of our portfolio, which originated in 1996, clearly understood the importance of self-reflection because they included text boxes explicitly for that purpose. In fact, the original concept of our electronic portfolio system, known as ePortfolio, was driven by four learner-centered principles conceived by Paul Treuer, the faculty member and visionary behind the tool developed and used at the University of Minnesota Duluth (UMD). These four principles are:

1. Students not only own their portfolios and the information they contain, but also have responsibility for managing that information.
2. Students learn to manage that data responsibly by selecting which singular pieces of information—text files, digital images, videos, or audio—to share with each and every potential viewer of the portfolio. In other words, because the portfolio is not merely a web space or a DVD that displays the same information to all who view it, students must select the items as well as choose the individuals who will see those items in any number of combinations, thereby having the potential to customize the portfolio for each viewer or group of viewers.
3. Students are encouraged to create a lifelong record of their learning through the University granting its graduates lifelong access to their portfolios.
4. Students are urged to consistently reflect on their learning, not only while at the university but beyond.

These four principles represent steep learning goals, particularly for first-year students, but the first and second goals are somewhat more easily attained than the third and fourth. The objectives of taking ownership of the portfolio and using it responsibly begin to be realized by simply using the tool. Unlike similar applications that are more familiar to the

students, such as Facebook, ePortfolio allows no other person access to the digital text and images a student chooses to upload unless the student intentionally and thoughtfully grants that access. Students understand the portfolio is theirs alone and learn to appreciate the importance of being selective, both in terms of what to share and with whom. In contrast, merely requiring use of the tool for one semester does little to achieve the more complex third and fourth goals of fostering lifelong learning and consistent reflection on it. A large part of the difficulty may be that most college students are product—not process—driven. Much research on student motivation (Svinicki, 2004; Lowman, 1990; Milton, Pollio, & Eison, 1986) indicates students are too often motivated by grades or performance rather than learning. Experience working with such students shows us they want to know what is due and when, not dwell on what they did to finish the task or what they actually learned by doing so. As a result, each assigned task in each course can easily become a singular item on the checklist for reaching the ultimate goal—graduation.   Learning becomes fragmented and compartmentalized, instead of fluid and ongoing.

The Research Question: Recognizing and Defining the Problem

The evidence that ePortfolio's higher-level learning goals were far from being met in my freshman writing courses was abundant. In reviewing the so-called "reflection" statements my students included in their portfolios over the first four years they used the tool, I found little that could be deemed reflective in nature. For example, in fall semester 2001, the first year of required use, my students' typical reflection statements contained nothing more than the words "paper" or "Final RP [research paper]" in the text box designed for this purpose. Similarly, in fall semester 2002, I found phrases such as "my reserch [sic] paper."   After encouraging students to be more complete in their reflection statements, students in the fall terms of 2003 and 2004 began to at least write full sentences; for example, one reflected, "This is the research paper that I worked on all semester piece by piece. It is on organ donation." Alas, this was not even close to the in-depth look at learning I had hoped students would take by using our ePortfolio system.

To be fair, some of the higher-achieving students, apparently noting that the text boxes designated to hold their reflection statements held 250 words, did write more   than   two-sentence   reflection   statements. Unfortunately, these statements proved only to be longer, not more reflective:

This is my final composition research paper…I learned how to write a topic proposal [and] critical analysis along with many other writing styles. I learned how to correctly write thesis statements, unified…paragraphs,   and   a   memo   format. Paraphrasing,   in-text   citations,   MLA documentation, and transitions were commonplace and necessary for a quality paper. I learned how to organize materials…[and how to] utilize the library databases.

While this is a fairly good list of what was covered in class, it was only that—a list of what the student had done. Actual reflection on any learning that may have occurred while creating these products or the significance of that learning was still missing.

Realizing the students' reflection statements were lacking but not being able to identify why, I began my own reflecting on what a "good" reflection statement is and how, or whether, I was teaching my students to write one. This led to the discomforting conclusion that far from teaching students how to reflect on their work, I had relied on two unproductive approaches. The first was "reflection on command," an exercise which occurred during our computer lab sessions when students would upload papers into ePortfolio and I would say, "Now write a reflection statement." This approach produced the one- and two-word reflection statements. Seeing this approach fail, I tried the "castor oil," or "do it because it's good for you," argument. The goal was to convince students that "someday" they would be glad they had written about what they learned because it would help them land a job after graduation. To assist them, at the term's end I asked students to name something each had learned in class. Distributing the list to each student before writing their final reflections resulted in the longer, yet still unreflective, descriptive   statements   of   the   course   content. Inadvertently, I had contributed to their viewing the class as a list of tasks that got them successfully through my course and on to the next. Clearly, it was not my students but my strategies that were failing to produce quality reflection statements.

As this failure on my part became evident, I was invited to participate in an interdisciplinary research project with two faculty members from each of our five collegiate units. We found all ten participants were experiencing similar learning issues with first-year students.   In particular, the students seemed largely unaware of the fact that they could exercise a great deal of control over their learning by simply understanding how they best learn and then relying on those strategies to guide them. A funded grant proposal aimed at studying this issue provided the group with research monies for a three-year period.

Since the group had already identified the need for students to understand how they, as individuals, best learn, the first task was to search for ways to help

students accomplish this goal in each faculty member's classroom. My project led me to Wade, Abrami, and Sclater (2005), who say, "Portfolios can provide evidence of student self-regulation. Students may review their own work and then modify their learning goals as a result of such reflection" (para. 18). The question for me was this: How do I get first-year students to do that effectively?

Reading the literature provided useful, albeit incomplete, information on motivating students to share the responsibility for their learning and to enhance it through critical reflection. Svinicki (2004) emphasizes that to motivate students, educators must help them recognize strategies for learning, which involves helping students know how they learn and what a task demands. In doing so, students are able to set their own goals and monitor their own learning, commonly known as becoming a self-regulated learner. Applying this concept to first-year writers, Zimmerman and Bandura (1994) demonstrated the importance of self-regulatory learning to writing achievement in a study that linked self-regulation variables to freshmen students' writing grades. Their study showed that a high degree of perceived self-efficacy for academic achievement in writing positively affected the goals students set. These goals dictated the quality of writing they found satisfactory which, in turn, positively affected their grades. In contrast, neither the level of writing instruction students received nor their measured verbal aptitude were found to be directly related to writing achievement. In short, Zimmerman and Bandura found that students who believed they had the ability to learn and who believed they had a degree of control over their learning set higher goals and, therefore, achieved at a higher level.

Savion (2006) made a similar point during a workshop presented to our research group. In her research, Savion asked students to identify reasons they did poorly on an assignment or test. She found that those students who blamed outside factors—the difficulty of the course, the teacher's inability to teach, a personal problem, an illness, and so on—also lacked the awareness that the only true influence students have on their achievement has to do with variables *they* control. These factors include coming to class, reading the assigned materials, taking notes, asking questions, participating in study groups, or employing other strategies they find effective. These, then, are the metacognitive skills from which students can draw to set goals, monitor goal attainment, and, ultimately, adjust what they are doing to attain higher levels of achievement.

While these researchers helped explain student motivation as it relates to self-regulation strategies, the scholarship on reflection proved to be less helpful than expected. Instead of clarifying what prevents students

from being more self-reflective, much of the literature served only to confuse the matter. Masui and De Corte's (2005) study asked business economics students to perform "reflection tasks" as a part of each homework assignment "to discover to what extent the respondents felt responsible for . . . their successes and failures" (p. 359). To accomplish this, they asked students to predict the score they would get, to "reflect on" the reasons for getting the scores they actually got, and to determine ways they could influence future outcomes based on these reflections. The researchers determined that the experimental group members taking part in these "reflective" activities were better able to attribute their success or failure to certain study skills and that these students achieved better results than did the control group members. However, what Masui and De Corte labeled "reflection" seemed to be the same as what Svinicki as well as Zimmerman and Bandura labeled "regulation." Further research showed that others equated the two skills as well. For example, a study out of Norway used group reflection on writing portfolios produced by teacher education students to improve student learning (Hoel & Haugaløkken, 2004). The researchers based their findings on a reflective method whereby students were to "look back" on an event in order to get a new perspective on it, to identify new strategies, and to then try new ways of approaching the activity that could be transferred to the perspective teachers' dealing with their future students. In short, this study described another way in which students could self-regulate their behaviors to achieve future results. In much the same way, Ryder's (2002) chapter on helping first-year composition students create reflective portfolios suggested that teachers ask their students to write a "reflective essay" that describes their progress as writers based on what they achieved in the class that term. The instructions for writing this reflective piece encouraged students to examine their various assignments to find changes that occurred in their approach to writing, to identify strategies they used that did or did not result in success, and to determine why they did or did not use these strategies in their writing. Therefore, this author, too, focused on self-regulation strategies, despite the fact that the process was labeled as "reflective practice."

Perhaps even less helpful were the studies that defined reflection as something akin to keeping a journal, a practice in recording one's "feelings" about various aspects of what they were doing or learning in the classroom (Morgan, 2003; Parkinson, 2005). While potentially helpful in certain situations, keeping a diary about learning was not my objective in requiring students to use ePortfolio for reflection. A definition of "reflection" that came closer to meeting my expectations was described on Klein's (2005) web site for art teachers at the University of Wisconsin–Stout.

She said that an excellent reflection statement will not only be well written but also **relate practice or experience to an understanding of learning; demonstrate an ability to link course work to practice; give insight, with examples, as to how learning has taken place or standards have been met; and demonstrate an ability to project future short-term and long-term goals** (emphasis added). Like Klein, I wanted my students' reflection statements to be a product of critical thinking that went beyond what they were doing in the particular course they were taking from me. This same concern was well stated by Emmons (2003) in an article describing how she reconsidered the objectives of portfolio cover letters her composition students wrote, saying:

> The development of the narrative of progress as a response strategy brings into sharp relief the limitations of our current reflective practices: while we encourage students to take an active and thoughtful role in assessing their own work, we paradoxically allow them to remain isolated from the social-interactional nature of that work. In the end, students . . . leave our classes with an overall sense of improvement but without a sense of how that improvement reflects (or does not reflect) the rhetorical demands and pressures of . . . the academic community. Thus, our reflective assignments are quickly refigured as self-reflective assignments, as occasions to consider highly personal and individual qualities and achievements, rather than as occasions to struggle with the relationships—both textual and rhetorical—that constitute writing for a particular community. (p. 44)

To remedy this shortcoming, Emmons reworked her reflective assignment to place the students' responses in the realm of academic discourse. She asked students to analyze what they learned about academic discourse in her course and then examine the changes they made in their assignments that brought their work closer to meeting the expectations of "the idealized academic discourse" (p. 54), thereby teaching them that "what counts as 'good writing' varies depending on context, goals, and community values" (p. 60). While an admirable extension of the reflective process, Emmons' revised assignment continued to place student writing in an academic context. But why limit the act of reflection to the academic realm? Isn't the goal to help students reflect on how their classroom experiences relate to life beyond the classroom? Isn't the goal to help students integrate their learning experiences? Isn't the goal to equip first-year writing students to analyze what they learned and link it not only to learning in other college courses but also to

skills they will use for a lifetime, professionally, personally, and civically? At the end of the semester, isn't the goal to never again have a student ask the question I have so often heard: "Will I ever use what I learned in this class again?"

Ultimately, the literature showed that these questions are answered through how Biggs, as cited in Leung and Kember (2003), defined a "deep approach" to learning, a categorization Leung and Kember said is typically attributed to Marton and Säljö. According to Biggs, a student who "adopts a deep approach" to learning is one who:

- is interested in the academic task and derives enjoyment from carrying it out;
- searches for the meaning inherent in the task (if a prose passage, the intention of the author);
- personalizes the task, making it meaningful to [one's] own experience and to the real world;
- integrates aspects or parts of task into a whole (for instance, relates evidence to a conclusion), sees relationships between this whole and previous knowledge; and
- tries to theorise [sic] about the task, forms hypotheses. (as cited in Leung & Kember, 2003, p. 62)

The authors contrasted this deep approach to learning with that of students who adopt a "surface approach." Biggs describes such a student as one who:

- sees the task as a demand to be met, a necessary imposition if some other goal is to be reached (a qualification for instance);
- sees the aspects or parts of the task as discrete and unrelated either to each other or to other tasks;
- is worried about the time the task is taking;
- avoids personal or other meanings the task may have; and
- relies on memorisation [sic], attempting to reproduce the surface aspects of the task (the words used, for example, or a diagram or mnemonic). (as cited in Leung & Kember, 2003, pp. 62-63)

Leung and Kember's research demonstrated a relationship between students' approaches to learning and their reflective practices. They found that habitual action, in other words the routine adherence to mechanical procedure, is related to surface approaches. In contrast, true understanding and critical reflection are related to deep approaches to learning, perhaps to the extent that "a deep approach is a prerequisite for reflection" (Leung & Kember, 2003, p. 63).

The challenge, then, is to elicit this deep approach to learning and the critical reflection that accompanies it. Teaching students to recognize the learning strategies that allow them to monitor and alter their own processes for success is certainly important, but self-regulation is not critical reflection. To avoid isolating each learning experience, disconnecting it from any other they might have throughout their college years, students need to learn the skill of critical reflection. They need to see the value of their education as a whole, not only during the experience, but for a lifetime.

Methodology: Solving the Problem

To help my first-year writing students become both self-regulating and critically reflective learners, the course needed to change. Based on the work being done in the research cohort, I implemented three new strategies in an attempt to reach these goals. First, to promote self-regulation I began using surveys specifically designed to uncover the strategies students used to complete a writing assignment. These surveys were like those Swiedel (1996) reports using to help students document their study strategies in an Educational Psychology course, which resulted in improved grades after the new strategies were implemented. Colleagues in the grant-sponsored research cohort in which I participated used similar instruments with great success. Borrowing from their experiences, I created a brief questionnaire that students completed the same day they submitted a paper for grading; although each survey varied slightly, Appendix A provides a typical sample. Of the eight papers assigned, surveys were administered after the first, fourth, and sixth papers rather than after each one. This was done to minimize the time spent doing the exercise, since Swiedel's students complained about the extra time devoted to this activity. The questions focused on what goal(s) students set, when they started their task, where they worked, whether they read assigned material, whether they got their questions answered and from whom, whether they revised their papers, whether they read the instructor's comments on graded papers, and what grades they thought they would get. In other words, the surveys were designed to explicitly reveal to students what they were and were not doing to reach their writing goals; they were intended to help create self-regulated learners.

Surveys were completed the same day papers were submitted for grading. I collected the surveys and then returned them to students the class period following the one at which their graded papers were returned. This allowed the students time to read the comments written on their papers and see their grades before I employed the next step in promoting self-regulation. This step

involved asking students to use the back of the survey to write responses to questions such as these: What did you learn by completing this paper? What process did you use to complete the paper and what did you learn from that process? Considering the process you used, what part of the process will you repeat for the next paper and what will you change? Such questions forced students to consider which strategies did and did not work for them as well as made them think about and record what they could do differently, if they chose to, as they worked on the next paper. At this point, I again collected the surveys so that I could redistribute them for reference during the computer lab session at which students were to upload and reflect on the paper using ePortfolio. The survey responses guided and, as we shall see later, improved the quality of their reflection statements.

While the surveys helped students recognize behaviors that did and did not work well for achieving their goals, more was needed to guide them toward deep learning. The second strategy I employed was to pose questions and lead discussions during nearly every class period that were specifically designed to help students recognize the meaning and purpose of each course activity that was undertaken. Beyond identifying course learning outcomes, the point was to help students link those outcomes to experiences outside the writing classroom. During any given class period I might ask students:

- Why am I asking you to do this assignment?
- Why am I asking you to do it at this point in the semester?
- Given your other assignments, what is the purpose of this one?
- How and why might you use this skill in your other courses?
- How might you use this skill professionally, after you graduate?
- How could this skill benefit you as a citizen and contributing member of society?

The resulting class discussions, albeit often brief, created connections for the students not only between the first-year writing course and their other college courses but between the first-year course and life beyond the university. Whenever possible, I also tried to provide a "real life" illustration of how they might use the skills they were learning outside the college classroom. For example, not long ago a letter to the editor appeared in our local newspaper regarding an action the writer claimed was taken by the federal government. Unfortunately, the writer of the letter was in error; the federal government had taken no such action. When the error was revealed, the writer admitted to unwisely relying on the Internet and the word of someone he

believed to be a reputable source of information for writing his letter. Subsequently, he retracted the letter and was reprimanded—publically—by the paper's editorial board. The reprimand included the board's refusal to accept any future letters to the editor from this particular person. The learning opportunity for students came in reading the letter writer's retraction. In it the writer apologized for not checking the reliability of sources cited in the letter, for not verifying the credibility of what had been written, and for misquoting and misrepresenting the sources. In other words, the writer apologized for not employing the very research, citation, critical analysis, and argumentation skills that are taught in the freshman composition course the students were taking. Moreover, the apologetic letter writer used the very terminology we were using in the classroom. Such "real life" examples made a tremendous impact on the students.

The third strategy used to reach the learning goals set for students was to increase the ePortfolio requirement from reflecting once at the semester's end to reflecting on each paper throughout the semester. As in the past, students were taught early in the term how to use the ePortfolio tool for uploading their papers. However, students now had their self-regulation survey, which included their handwritten comments as to what they would maintain or change for the next writing assignment, for use in guiding their reflections. In addition, during the computer lab session during which the students uploaded and reflected upon their first paper, I verbally prompted them with cues: What did you learn by writing this paper? When might you need to use this skill again? In what other courses might you use this skill? How might you use this skill after you graduate? The resulting reflections were neither shared with me nor graded until the end of the term, thereby allowing students to revise them as needed. This method was aimed at providing scaffolding for the two more difficult learner-centered principles on which ePortfolio is based: to encourage creation of a lifelong record of learning and to consistently reflect on that learning.

The critical question, of course, is whether either the surveys or the in-class attempts to make students think more profoundly about their learning had any impact on the students' ability to self-regulate their writing process and, more importantly, post reflection statements in their ePortfolios which demonstrated the deeper approach to learning I hoped that my students would reach.

Results: ePortfolio Reflection Statements

To answer these overarching questions, I qualitatively analyzed my students' reflection statements over the first eight years they were required to use ePortfolio in the freshman writing course. The first four years represent the period of time prior to my participation in the interdisciplinary research group, and the second four represent the period of time the methodology described above was used in the course. Because it was not until midway through this eight-year period that I began requiring reflections for all papers rather than just the final paper, for consistency this study analyzes the statements students posted for the final paper only. Although these reflections were not graded as we moved through the semester, during the second four years I began giving students a nominal number of points for completing their ePortfolios. The value of the requirement was intentionally kept low to avoid penalizing students for shortcomings related to using a new tool and to keep the focus of the course where it belonged: on writing well-researched academic arguments. Before writing their final reflections, students received a scoring rubric that reinforced the reflection prompts they had heard several times during the semester: Why and when did you write the paper? What did you learn by writing it? How might what you learned be useful to you in other college courses or after you graduate? Students taking the class during the second half of this study, then, had not only the self-regulation surveys but also the rubric to guide their final reflection writing.

In total eight, first-year writing sections with a registration cap of 25 students each were included in the study. Students who withdrew from the course, who did not post a final reflection statement, or who did not agree to participate in the study were eliminated. Of the 176 registered students, 78% posted the final reflection and agreed to participate in the study. Their reflection statements were analyzed to determine the average number of words written as well as the percentage that fell into each of the following categories:

1. Reflections that **only** named the final project (e.g., "Final research paper" or "This is the final paper I wrote for my freshman writing class.")
2. Reflections that not only named the paper but also added a description of the paper itself or the process used to write it
3. Reflections that identified learning outcomes of the assigned paper
4. Reflections that included statements related to self-regulation strategies
5. Reflections that included statements relating learning in this course to other college courses
6. Reflections that included statements relating learning in this course to life beyond college

Obviously students' reflection statements could include phrases or sentences that fell into any or all of the six categories, so the analysis reports the overall percentage

Figure 1
Percentage Naming Only
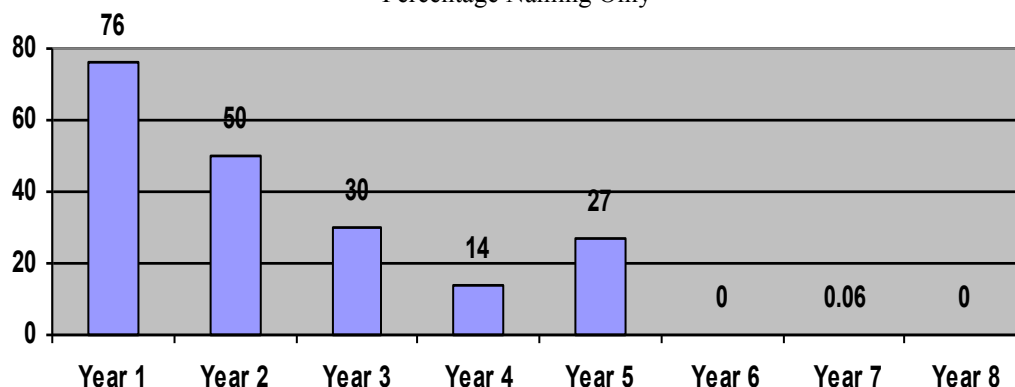
Figure 2
Percentage Naming and Describing
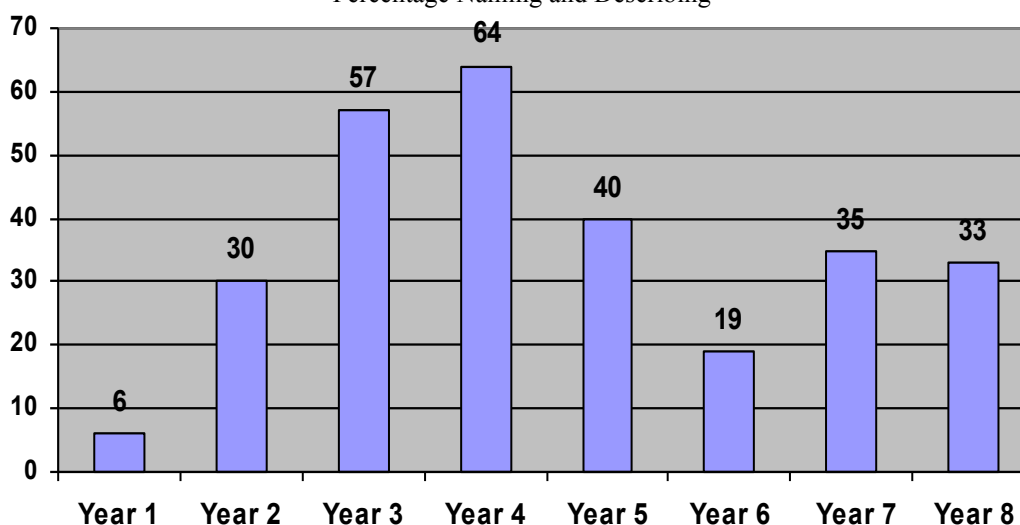
of reflective comments in each category. Note that each category advances the level of thinking a student would need to have done to gain insight into his or her learning, thereby demonstrating deeper reflection. The results of this analysis are discussed below.

Number of Words Written

While the number of words a student writes tells us nothing about the quality of what was written, in this study it did speak to the seriousness with which students approached the task of reflection. The first year that ePortfolio use was required, the average number of words students wrote was 3. In short, students did not reflect at all. Over the next three years, the average increased to 21 words, then 33, then 39. However, once the methods used for this research project were employed, the average number of words suddenly jumped to 94 in year 5 and then to a high of

125 in year 6. The numbers leveled to 96 in year 7 and 101 in year 8. While this is still not a significant amount of writing, it does represent a significant increase in the amount of time and attention students paid the task of reflection.

Reflection Level One: Naming the Item

As discussed earlier, when students first started using ePortfolio, they tended to use the reflection text box as a place to simply name the item they had uploaded, the final research project. A typical example would read, "This paper was my final research paper." After the self-regulation surveys and classroom techniques meant to encourage reflection were implemented, the percentage of students who did nothing but name the uploaded piece dropped dramatically. In fact, over the last three years, virtually no students wrote this type of reflection statement (see Figure 1).

Figure 3
Percentage Including Learning Outcomes
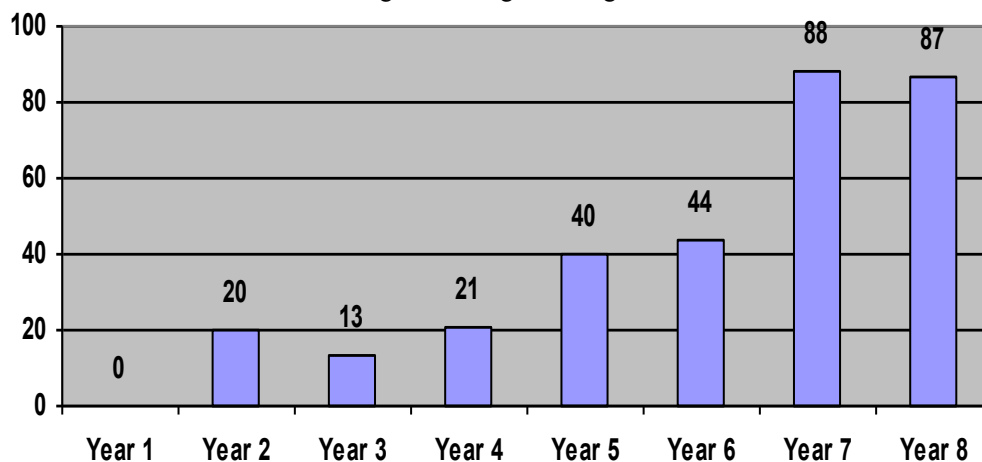
Reflection Level Two: Naming and Describing

Students whose reflective thought went a bit beyond naming the item were those who both named it and then described either the paper or the process used to write it (see Figure 2). Those who described the paper would typically state the topic and, sometimes, the argument made in the paper. Those describing the process wrote statements such as, "This paper was the final try to get everything right. We had all of our paragraphs edited by classmates and teachers, and we had to make our best finished product. This paper will show how everything fell into place throughout the semester." Another student wrote, "We had been writing several papers leading up to this one," and another said, "Throughout the semester we had done prior assignments all preparing us for this final research paper." Although such descriptions probably would not benefit students' learning in the long run, they did serve to remind students of what they had done and how.

Reflection Level 3: Identifying Learning Outcomes

The next level of reflection indicated that some participants recognized the types of learning outcomes the course was designed to achieve and included them in their reflection statements (see Figure 3). This was an important leap because pointing to specific lessons learned could help remind students of their transferable skills, skills that we had discussed in class and that could be useful in any number of other situations. Sometimes the outcomes were not so much reflected upon, however, as they were listed. One student wrote, "I learned how to write argumentatively, how to analyze sources, how to research, how to use MLA citations, how to edit, how to word process, how to use technology better, how to search online, and just overall

become a better writer at the college level." Other students went beyond simply listing skills to discussing higher-level objectives: "By the end [of the semester] it [the research paper] didn't really seem like a requirement as I now would like to be able to call myself an expert on the topic . . . there was a lot of research and understanding of all aspects of the data that went into the paper." Another student recognized where he fell short of the objectives and wrote about what he did to rectify the problem: "I needed to make my argument more clear and coherent. . . . [For the final paper I] changed the order of sources, explained ideas more thoroughly, and tried to make the argument as tight as possible." And one student wrote of audience awareness, saying, "I need to keep in mind that I am not writing to the teacher but to everyone." These students had moved far beyond the initial goals the surveys showed the students had brought to class, such as getting a "good" grade or finishing the task on time, thus revealing how far they had come as writers and thinkers.

Reflection Level Four: Identifying Self-regulating Strategies

Beyond identifying learning outcomes, students need to recognize that they have control over many of the factors leading to desired outcomes, whether established by themselves or instructors. At issue was whether students were able to transfer information from their survey responses into reflective insight as to what they might do differently to affect outcomes. Prior to the time self-regulation surveys were used in class, no student reflections mentioned self-regulation techniques (see Figure 4). However, the surveys proved to be quite valuable to the students, many of whom wrote reflections that stated specific actions they took to

Figure 4
Percentage Including Self-Regulating Behaviors
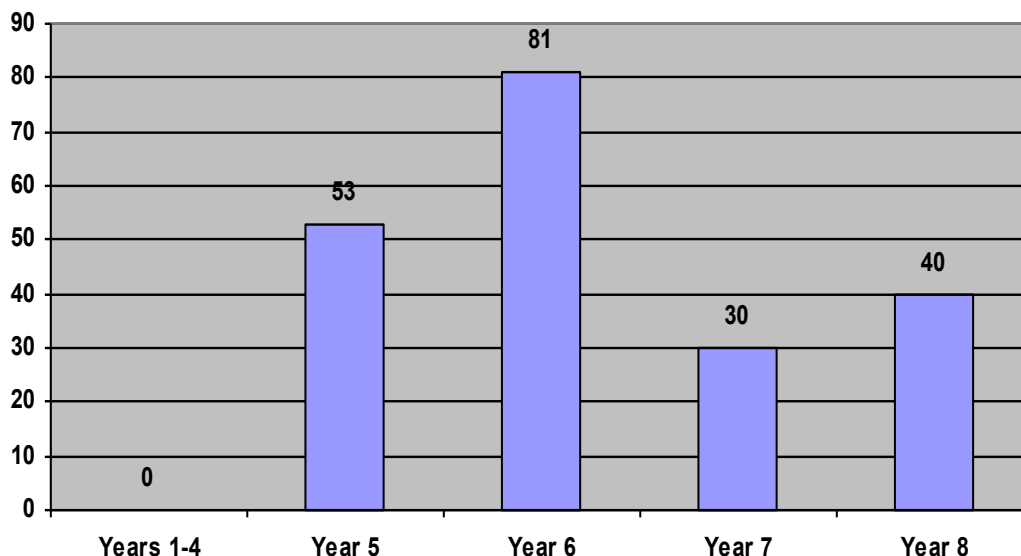
produce desired results after urse. Apparently I was not surveys. Evidence of this in students' ePortfolio final statements included, "It is amazing how much time and effort one has to put into a fully polished research paper. . . . When I write another research paper what I might do differently is spend my time more wisely." Another wrote, "I really took into account my professor's comments and my peer reviewer's comments when I wrote my finished product." In regard to asking for help, one student mentioned meeting with me to "ask for advice on creating a more coherent and stronger argument," concluding that "the conference really helped me." Finally, a student summarized the behavioral changes made this way: "I fixed or am working on my weaknesses and recognize my strengths." Despite these advances in self-regulatory behavior, as Figure 4 shows, the percentage of students including this type of statement in the final reflection dropped during years 7 and 8. While it is impossible to know the exact reasons for the decline, my guess is that the best results were obtained when I was most heavily involved in the research cohort and put the most energy into employing the strategies used to elicit change. This is an excellent reminder for teachers and students alike that desired outcomes are realized and maintained only with sustained effort.

Reflection Levels Five & Six: Relating Learning to College and Beyond

As noted earlier, over the many years I have been teaching first-year writing, a perennial question students asked was whether they would ever again use teaching students about the relationships between our learning outcomes and other college courses or life beyond college, connections that may be obvious to professors but that many first-year students seem unable to make. Although time shortages made relating every lesson to applications beyond the classroom somewhat difficult, significant progress was made.

Ultimately, one-third to one-half of the students' final reflections mentioned learning that related to life beyond this one semester of instruction. For example, one student noted that the learning would be helpful "when I need to make a point to someone on a topic that is being argued. I can also use the researching skills when I get interested in something and just want to learn more." Another saw that learning "how to develop an argument and write clearly" were skills to employ "in literally every other college course taken." Looking beyond classroom audiences, a student reflected, "The skills from this paper will…help me…write for specific audiences to get my point across effectively to whoever [sic] I may be talking to." The more accomplished students were able to see that new-found skills would be useful "in the future at my job" or "just doing a presentation to a committee." The most accomplished recognized that the learning had equipped them for a lifetime: "I have learned how to be critical of a source, to analyze the material. I have learned how to ask some [of] those 'wh' questions. Why? Who said? I want proof, and if there is truth to something, then that shouldn't be a problem! In the real world I need to be able to think for myself, so learning to be critical is very important." Reflection statements such as these that

Figure 5
Percentage Relating Learning to Other College Courses

Figure 5: Percentage Relating Learning to Other College Courses

Figure 6
Percentage Relating Learning to Life Beyond College
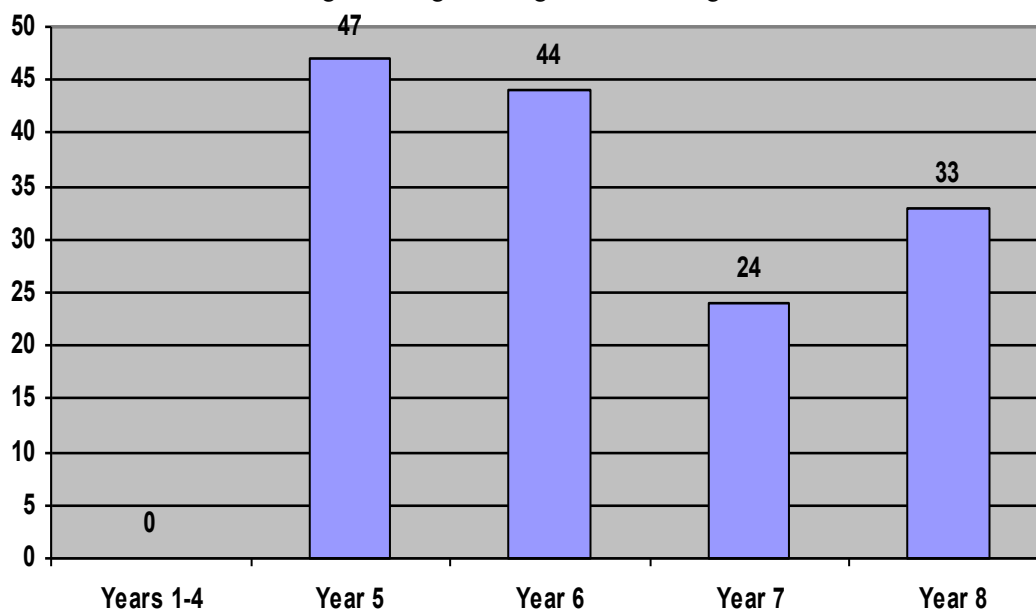
Figure 6: Percentage Relating Learning to Life Beyond College
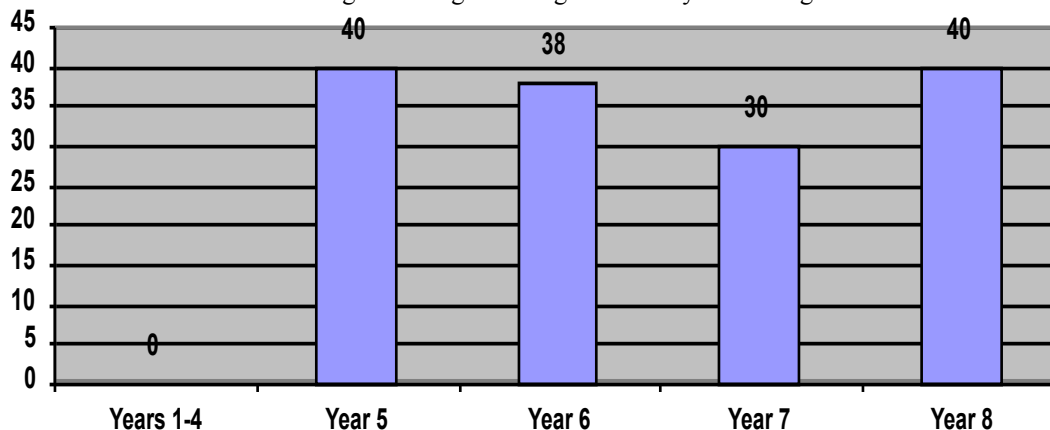
related to college and beyond were often inextricably linked, yet they were differentiated for the purpose of the qualitative analysis (see Figures 5 and 6).

Conclusion

The strategies taken to promote first-year writing students' self-regulating behavior and deeper reflection through ePortfolio use were successful. As instructors, the first step in reaching the goal is to recognize that these are two very different objectives. Self-regulation involves helping students realize what a task demands and how they best learn so that they develop the ability to monitor their own behaviors, adjusting as needed to reach their goals. Critical reflection refers to a deeper

level of learning, a level which allows the student to apply learning to practice. This deeper approach includes integrating various experiences into a coherent whole, thereby creating a fluid, rather than disjointed, educational process. The research project undertaken demonstrates that the three classroom strategies implemented to foster these skills were successful. Used in concert, the self-regulation surveys, classroom discussions and prompts, and consistent use of ePortfolio throughout the semester set students on the path to achieving the ePortfolio goals that are more difficult to obtain: creating a lifelong record of learning and regularly reflecting on learning, both at the university and beyond. The results reported here suggest that being intentional about classroom

pedagogy can indeed elicit deeper reflection. The final goal, however, is to help students reach the point when the scaffolding can be removed and students not only continue to create their record of learning but also consistently and critically reflect on it on their own. While lofty, the goal is reachable. Through persistent, intentional attention to the challenge before us, by the time our students leave the university we have the opportunity to equip them with the abilities needed to prosper in the dynamic world in which we live. It is not enough to equip first-year writing students with such skills and stop there. The next step is to integrate such efforts throughout the educational process. Only then will we truly have created lifelong, reflective learners.

References

Barrett, H. (2011). electronicportfolios.org. Retrieved from http://helenbarrett.com/

Cambridge. D. (2010). *E-portfolios for lifelong learning and assessment*. San Francisco, CA: Jossey-Bass.

Emmons, K. (2003). Rethinking genres of reflection: Student portfolio cover letters and the narrative of progress. *Composition Studies*, *31*(1), 43-62.

Hoel, T. L., & Haugaløkken, O. K. (2004). Response groups as learning resources when working with portfolios. *Journal of Education for Teaching, 30*(3), 226-241.

Irvin, L. L. (2004). Reflection in the electronic writing classroom. *Computers and Composition Online.* Retrieved from http://www.bgsu.edu/cconline/irvin/Introduction.htm

Klein, S. (2005). Guide to developing preservice and inservice art teaching portfolios. Retrieved from http://www.uwstout.edu/static/art/artedportfolios/

Kember, D., & Leung, D. Y. P. (with Jones, A., Loke, A. Y., McKay, J., Sinclair, K., et al.). (2000). Development of a questionnaire to measure the level of reflective thinking. *Assessment & Evaluation in Higher Education*, *25*(4), 381-395.

Kitchenham, A. (2008). The evolution of John Mezirow's transformative learning theory. *Journal of Transformative Education 6*(2), 104-123.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliff, NJ: Prentice Hall.

Leung, D.Y. P., & Kember, D. (2003). The relationship between approaches to learning and reflection upon practice. *Educational Psychology, 23*(1), 61-71.

Lowman, J. (1990). Promoting motivation and learning. *College Teaching*, *38*(4), 136-139.

Masui, C., & De Corte, E. (2005). Learning to reflect and to attribute constructively as basic components of self-regulated learning. *British Journal of Educational Psychology*, *75,* 351-372.

Milton, O., Pollio, H. R., & Eison, J. A. (1986). *Making sense of college grades*. San Francisco, CA: Jossey-Bass.

Morgan, B. M. (2003). Cooperative learning in higher education: Undergraduate student reflections on group examinations for group grades. *College Student Journal, 37*(1), 40-49.

Parkinson, D. D. (2005). Unexpected student reflections for an underused genre. *College Teaching, 53*(4), 147-151.

Ryder, P. M. (2002). A writing portfolio assignment. In D. Roen, V. Pantoja, L. Yena, S. K. Miller, & E. Waggoner (Eds.), *Strategies for teaching first-year composition* (pp. 182-185). Urbana, IL: NCTE.

Savion, L. (2006). *New strategies for motivating students*. University of Minnesota at Minneapolis Breeze presentation.

Schön, D. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Svinicki, M. D. (2004). *Learning and motivation in the postsecondary classroom*. Bolton, MA: Anker.

Sweidel, G. B. (1996). Study strategy portfolio: A project to enhance study skills and time management. *Teaching of Psychology, 23*(4), 246-248.

Wade, A., Abrami, P. C., & Sclater, J. (2005). An electronic portfolio to support learning. *Canadian Journal of Learning and Technology, 31*(3), Retrieved from http://www.cjlt.ca/index.php/cjlt/article/view/94/88

Yancey, K. B. (1998). *Reflection in the writing classroom*. Logan, UT: Utah State UP.

Zimmerman, B. J., & Bandura, A. (1994). Impact of self-regulatory influences on writing course attainment. *American Education Research Journal*, *31*(4), 845-862.

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Acknowledgement

Appendix A
Paper 4: Comparative Analysis

Name _____ Section _____

After finishing any project, it's a good idea to think back on what you wanted to have happen, what you did to make that happen, and how close you came to accomplishing your goal. Paying attention to what worked for you and what didn't is the only way you can know whether you need to make changes or what changes to make. To help you do that, answer the questions below.

1. What was the most important goal you had for this assignment?

    _____ I had no goal.

    _____ My most important goal was _____.

2. In preparing to write this paper, how much of the assigned reading did you do?
    None   Some   All

3. How did you approach completing the draft you brought for peer review? Put an X in front of the **one** response that best describes your approach.

    _____ I started as soon as I got the assignment and worked on it steadily until it was due.

    _____ I waited until the night before the draft was due to begin drafting the paper.

    _____ I didn't start right away, but I **didn't** wait until the night before to begin writing.

4. I did most of my writing in this location: _____

5. I revised my paper (circle one)   **thoroughly   somewhat   not at all**.

6. I paid (circle one)   **a great deal of   some   no**   attention to my peer reviewer's comments.

7. I had questions on the assignment that needed to be answered outside of class.   **Yes   No**

8. If yes to #7, I sought answers to my questions.   **Yes   No**

9. If yes to #8, indicate where you went for help (circle all that apply):

    my instructor   Writing Workshop   a classmate   other (specify _____)

10. I have read (circle one) **none   some   most   all**   of the comments my instructor has written on my past papers.

11. Of the 100 points possible for this paper, I think I'll get about _____ points.

Remake/Remodel: Using ePortfolios and a System of Gates
to Improve Student Assessment and Program Evaluation

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Electronic portfolios have become increasingly popular. The value of a portfolio, though, depends on how, when, and why students create, submit, and have their portfolios evaluated. In the following paper, we describe how we redesigned a program's assessment and evaluation plan around the use of electronic portfolios and a system of gates focusing on the larger assessment/evaluation framework first and the technology second.

Institutions of Higher Education find themselves in an age of accountability (Alexander, 2000; Gansemer-Topf & Schuh, 2006; Welsh & Metcalf, 2003). Stakeholders such as accreditors, policymakers, alumni, parents, and students are demanding proof from institutions of higher education of quality teaching and student learning like never before (Millett, Payne, Dwyer, Stickler, & Alexiou, 2008). Increased focus has especially been placed on institutions that offer courses and programs online (Gabriel, 2010; Means, Toyama, Murphy, Bakia, & Jones, 2010; Martinez, Liu, Watson, & Bichelmeyer, 2006; Rovai, 2003) and recently there is even a push for institutions to better prepare graduates for gainful employment (Hamilton, 2010). The focus on accountability appears to be here to stay and the burden of proof lies on the shoulders of institutions of higher education to provide evidence of high quality teaching and learning. As a result, many teacher education programs have turned to portfolios to address these new accountability mandates from accreditors and other stakeholders (Fiedler, Mullen, & Finnegan, 2009).

Portfolios have become a popular form of assessment across all fields and levels of education (Brickley, Schwartz, & Suen, 2000; Chen & Black, 2010) but especially in our field—the field of teacher education (Maher & Gerbic, 2009; Strudler & Wetzel, 2005). The use of portfolios (or specifically portfolio assessment) in education began in the late 1980s (Barrett, 2007). However, the use of portfolios did not come into widespread practice until the late 1990s (Barton & Collins, 1993; Strudler & Wetzel, 2005; Wade & Yarbrough, 1996). Since that time, electronic portfolios in particular have become increasingly popular (Barrett, 2002; Penny & Kinslow, 2006; Strudler & Wetzel, 2005; Williams, Wetzel, & Wilhelm, 2004). In fact, electronic portfolios, which we will refer to as ePortfolios throughout this paper, have been described as "higher education's new 'got to have it' tool" (Cohn & Hibbitts, 2004, p. 7). Some have even gone so far to suggest that ePortfolios have the potential to change higher education significantly (Love, McKean, & Gathercoal, 2004;

Treuer & Jenson, 2003). Not surprisingly, colleges and universities are rushing to find ways to use this "got to have it" tool—especially in this new age of accountability. Overall, though, colleges and universities are having mixed results with implementing ePortfolios into their programs (as suggested in Fielder, Mullen, & Finnegan, 2009; Gathercoal, Love, Bryde, & McKean, 2002; Love et al., 2004).

Despite the lack of empirical evidence supporting the benefits of ePortfolios (Evans & Powell, 2007; Hartmann & Calandra, 2007; Reardon & Hartley, 2007), educators have identified a number of benefits of ePortfolios. These benefits include experience using and learning about computer applications (Lin, 2008; Milman & Kilbane, 2005; Wall, Higgins, Miller, & Packard, 2006), easy access and updates to portfolios (Jun, Anthony, Achrazoglou, & Coghill-Behrends, 2007; Strudler & Wetzel, 2008), promoting reflection (Lin, 2008; Strudler & Wetzel, 2008), supporting formative assessment (Wall et al., 2006), tracking student learning and performance for accreditation and program evaluation purposes (Strudler & Wetzel, 2008), improving communication between faculty and students (Strudler & Wetzel, 2008), landing a job after graduation (Strudler & Wetzel, 2005; Ward & Moser, 2008; Wetzel & Strudler, 2006), and fostering lifelong learning (Heinrich, Bhattacharya, & Rayudu, 2007) to name a few.

Therefore, regardless of the "fad" factor, there are some sound reasons that programs, colleges, and universities express interest in, if not completely implement, an ePortfolio system. However, implementing an ePortfolio system can be challenging (Gathercoal et al., 2002; Love et al., 2004). And in fact, while some like Garthercoal et al. (2002) suggest implementing an ePortfolio system is easier when an academic unit already uses a paper portfolio, we contend that it can be harder to transition from a paper-based portfolio to an ePortfolio system than it is to start from nothing because of the assumptions and ways of doing things that faculty and staff might carry with them.

When faced with the task of converting a traditional summative paper-based portfolio to an ePortfolio, faculty and administrators often simply create an electronic version of the old paper-based portfolio (see Treuer & Jenson, 2003). We understand why faculty and staff might choose to do this; rather than disrupt a system that "works," faculty and staff opt to change as little as possible—in part to help maintain the status quo. However, simply creating an electronic version of a paper-based portfolio does not necessarily improve much (as alluded to by Treuer & Jenson, 2003). That is, simply making something "electronic" by putting it on the Web does not necessarily make it better (Bauerlein, 2008; Keen, 2008; Oppenheimer, 1997); in fact, we posit at times it can even make things worse by adding additional obstacles. Further, a portfolio—whether paper-based or electronic—is only as good as the larger assessment and program evaluation framework it is situated within (Fielder, Mullen, & Finnegan, 2009). We contend that much of the value of a portfolio (whether electronic or not) depends on how, when, and why students create, submit, and have their portfolios evaluated.

In the following paper, we share our experience redesigning a program's assessment and evaluation plan around the use of ePortfolios—using ePortfolios both as a means toward ensuring student learning throughout a program of study (as opposed to only at the end) through the use of regular reviews as well as a means toward large-scale program evaluation. As such, this is more of a story about how and why one program turned to the use of ePortfolios to improve and document teaching and learning, than it is a specific blueprint or empirical study on how to implement ePortfolios across all contexts. However, we believe that administrators, faculty, and staff across different disciplines will find our story about redesigning our program around ePortfolios compelling and useful.

Background

Some background information is needed to better understand our unique context as well as the decisions we made along the way. We, the three authors, were working at a Teacher Education Department at a private Catholic university in a western state in the United States. For the purpose of this paper, we will refer to this university as Catholic Western University (CWU). CWU though is not a traditional university. All of the programs in the School of Education and Counseling at CWU are accelerated programs offered year round. The academic year consists of six 8-week terms. In addition to the accelerated nature of the program, the teacher licensure students in the program are also dispersed across three western states—taking courses either online, through independent study, or face-to-face (and

often a combination of the three). The average student in the program is 37 years old.

Our program, like many teacher education programs, required our teacher licensure students (i.e., students preparing to get credentialed as K-12 teachers) to complete a paper-based portfolio at the end of their program to demonstrate what they "know and are able to do."

For years, our students would compile their paper-based portfolio and have it evaluated during the last semester of their program. While we the faculty at CWU preferred a portfolio method of assessing student learning (as opposed to simply relying on course grades or some type of exit exam), it became apparent over the years that our traditional summative paper-based portfolio system was not working as well as it could have been or even as it was intended.

Shortcomings of our Portfolio Process

It is easy in hindsight to identify why our portfolio method of assessing student learning was not working as well as it could have been. The portfolio became more of a box on a checklist that needed to be checked off than a meaningful or effective way to assess student learning (for students as well as faculty). This is in part because of the lack of purpose (i.e., faculty were unclear whether the portfolio was meant to serve as a reflective portfolio, a summative assessment portfolio, or a showcase portfolio), lack of structure (i.e., students could wait until their last semester before they began to create their portfolio), lack of emphasis (i.e., because students could and often did wait until their last semester to compile their portfolio, often it was rushed and simply not given enough time or focus), lack of specificity (e.g., students could choose what they included in the portfolio), lack of differentiation (e.g., undergraduate and graduate, despite the focus of their program essentially completed the "same" portfolio), and lack of consistency/reliability (e.g., expectations of faculty varied greatly about what a "proficient" artifact looked like). As a result, the portfolio system was not adequately demonstrating student learning or mastery of course content and was not being assessed consistently and adequately at the end of the students' programs. It took an outside entity, though, to help us recognize that our portfolio system was not working effectively. This is not as strange as it sounds, and some might even argue that this is the purpose of accreditation visits because many other institutions begin implementing e-portfolios as a result of accreditation (Love et al., 2004).

Around 2003, our program was confronted with the reality that the majority of the teacher education programs in the state were accredited by one of two teacher education accrediting bodies—the National

Council for Accreditation of Teacher Education (NCATE) or the Teacher Education Accreditation Council (TEAC). Over time, due to mounting political pressures from the State Department of Education coupled with a desire to remain competitive with other programs in the state and ultimately a desire to improve the quality of our program—we chose to seek national accreditation through TEAC.

TEAC Accreditation and Self-Study as a Catalyst for Change

We chose to seek accreditation through TEAC, like a growing number of other universities (Bollag, 2006), largely because of their evidence and claim-driven process (as opposed to NCATE's standards-based process) (Murray, 2000). As an accelerated non-traditional adult program serving three different states, our program was anything but "standard." TEAC's claim-driven and evidence-based model allows institutions to provide evidence for claims it makes about what their students know and can do rather than meet nationwide standards that might not apply to their programs or population.

After meeting TEAC's eligibility requirements, we conducted an internal audit and began preparing our *Inquiry Brief*. An Inquiry Brief is a self-study document in which a program provides evidence that it is producing "graduates who are competent, caring, and qualified educators, and that the program has the capacity to offer quality" (TEAC, 2009, para 2). Everyone involved in our program learned a great deal during this self-study process. Through this process, we realized that our assessment process—which relied heavily on evaluating students' final paper-based summative portfolios—was not providing reliable and valid evidence of student growth, mastery of state standards, or adequate data for larger program evaluation. Even before being audited by TEAC, it became clear that we did not have enough reliable and valid data to support the claims we made about student learning in our program. It was not that we lacked data; rather, we lacked the appropriate type of data. For instance, student grades alone are not reliable or valid enough to support claims about student learning. Moreover, while our administration had instituted an electronic data collection system—based in part on the paper-based portfolio—it resulted in large amounts of unreliable, invalid, and ultimately unused data. Not surprisingly, after the audit, TEAC specifically pointed out weaknesses in "Evidence of valid assessment" and "Program decisions and planning based on evidence."

Through the TEAC audit, we realized (some of us faster than others) that the problem was not the lack of data but rather that the wrong type of data was being collected at the wrong times (and largely without a standard means of gathering and interpreting said data). The data we were collecting was not standardized and it provided little evidence of whether or not instructors were providing similar (and quality) instruction based upon specific criteria. TEAC helped illustrate this by getting a group of us in a room together and asking us to all assess the same exact thing. The results, as you might imagine, were not consistent. In short, we had no valid means of evaluating the quality of varied (and widely-dispersed) affiliate faculty (i.e., part-time adjunct faculty) and their courses other than grades and student satisfaction surveys (which research suggests is not an adequate measure of teaching quality). What we wanted and needed was a means of tracking student learning as well as assessing the standardized quality of instruction across instructors and courses.

It became increasingly clear that to meet TEAC's requirements for accreditation, a new assessment and evaluation system was required. That is, rather than simply creating an electronic version of a paper-based system or adding electronic components to a paper-based assessment system, a new system needed to be developed. This was not an easy decision to come to because we all knew how much work a complete overhaul of our current assessment system would take. But in the end, we believed the hard work would pay off and result in more meaningful assessment and evaluation.

In summary, information obtained from our self-study and accreditation visit suggested that we did not have the type of evidence of student learning that we thought we had and needed for national accreditation. We needed a new means for obtaining evidence of student learning and growth over time and a means for ensuring standardization across affiliate faculty and courses.

Program Changes and Assessments

Due to the results of our self-study and accreditation visit, we had to make some important decisions about what we could and should change in the program. While we were comfortable with eliminating the old assessment system, we were not interested in making any more changes than needed. Given this, we decided to make some important changes that are addressed in the following pages.

Proficiencies

When confronted with the need to start over and build a reliable and valid assessment and evaluation system, following good practice, we began by asking, "What do students with a degree in education need to know and to be able to do?" Typically teacher educators would turn to state or national standards to

Table 1
Universal Proficiencies

Proficiency	Description
Critical Thinking:	The student will be able to gather information from observation, experience, reasoning, and/or communication, analyze that information, generate alternatives, solve problems, and evaluate the process and solution. Critical thinking is based on intellectual values that go beyond subject matter to include clarity, accuracy, precision, evidence, fairness, and multiple perspectives.
Learning Theory:	The student will have knowledge of the complex process of how people learn and will be able to apply a variety of learning theories in an educational setting.
Professionalism:	The student will have the ability to represent the teaching profession effectively by demonstrating the following characteristics: commitment to learning, adherence to ethical standards, respect for diversity, effective communication skills, effective interpersonal skills, and accountably for actions.
Assessment:	The student will understand and apply the principles of measurement, analysis, and decision making about what students know and are able to do.
Instruction:	The student will understand and use research-based strategies and techniques to facilitate student learning and to differentiate instruction based upon individual students' needs.
Technology:	The student will demonstrate understanding and appropriate applications of technology as they relate to effective instruction and to specific endorsement areas.
Values:	The student will demonstrate an understanding of democracy, ethics, moral integrity, multiculturalism, social justice, and the concept service learning.
Communication:	The student will be able to communicate effectively through speaking, writing, listening, and observing. Students will understand effective ways of talking with students and demonstrate appropriate communication skills to their students.
Discipline Knowledge:	The student will demonstrate proficiency in the specific content area(s) of their program, licensure and/or endorsement area.

answer a question like this. However, as a nontraditional teacher education program with students spanning three different states (and therefore three different state departments of education), three different state or national standards actually made this a very complicated question to answer. To make matters worse, in addition to three different sets of state standards, we also had years of additional outcomes being "added" on to our three sets of state standards, totaling over 90 different outcomes in all. After some careful reflection and lively discussions, we came to the conclusion that by trying to assess everything, we were actually not able to truly assess anything meaningfully. In hindsight, this is not surprising; this is the basic quantity versus quality dilemma faculty regularly face.

Rather than continue striving to address 90 different outcomes, we decided to synthesize the different outcomes into a short and hopefully meaningful set of outcomes we decided to call "Proficiencies." We created a proficiencies table (called the "cross walk") to illustrate to each stakeholder (e.g., the three different state departments of education) how each standard and outcome is addressed. The proficiencies consist of both a core set of proficiencies that all students getting a degree in education must meet (which are called "Universal Proficiencies" and listed in Table 1) as well as a list of discipline specific proficiencies that only pertain to certain fields of study (e.g., students seeking a license as a special education teacher have a different set of discipline specific proficiencies than students seeking a license as a math teacher). Discipline knowledge proficiencies were created for each of the different teacher licensure areas.

After the Universal Proficiencies and Discipline Proficiencies were created for each licensure program, we reviewed the curriculum to identify what courses and assignments best addressed the proficiencies. That is, we mapped the proficiencies to the curriculum. While the majority of the proficiencies were easily mapped to courses and assignments, there were some instances where we had to update the curriculum to address certain proficiencies.

Ultimately we hoped that by identifying fewer program outcomes and mapping those directly to specific courses and assignments, faculty and students should be better able to focus on addressing each proficiency in more depth.

The Gate System

Perhaps the biggest change we made was the creation of a Gate System—that is stages in each program where students must successfully pass a portfolio review to continue on in the program. A Gate System though would not have been realistically possible without utilizing an ePortfolio, given the accelerated nature of the program and the geographic dispersion of the faculty and students. The following pages specifically focus on describing the Gate System we developed and the role that on-going assessment, gates, a portfolio coordinator, and gatekeepers play in making this system work.

On-going assessment. One of the problems with waiting until the end of a student's program to assess what they have learned in a summative portfolio is that it is often too late to do much about it. For instance, after students have completed all of their coursework in a given program with passing grades, it becomes very difficult in our experience to hold students accountable for any gaps in their knowledge. On-going assessment provides faculty and administrators opportunities to formatively assess students' knowledge throughout their program and make adjustments as necessary. Therefore, we decided to change the portfolio development and review process to include on-going assessment. Rather than creating a cumulative and largely *post-hoc* portfolio in the final course of the program, we decided to require our students to begin contributing to their portfolio during their first courses and build on their portfolio after each course they complete.

We designed the system so that students would complete the assignments (which we refer to as "required artifacts") aligned with the proficiencies in each course and then include them in their portfolio. Further, each proficiency was intentionally designed to be addressed and assessed at least twice in each student's program (thus providing a means of demonstrating growth and learning over time).

Rubrics were created for each of the required artifacts and included in the syllabus for each course. The entire process was designed to be as transparent as possible. Faculty (at the course level) were then trained on how to use the rubrics to help ensure consistency. The system was set up so that as the required artifacts and rubrics are updated, faculty would receive additional training on how to use the rubrics. In addition, the assessment system was set up so that each year the accumulated data from the completed rubrics could be evaluated to ensure the reliability of the rubrics as measurement tools (to check for variance in inter-rater reliability).

This standardization and consistency was setup so that students could also improve upon their artifacts (after receiving feedback from their instructors) before adding it as an artifact to their ePortfolio. This provides students the ability to improve their artifacts (and evidence of learning) prior to submitting the artifacts for review in their portfolios.

Gates. A key component to making on-going assessment meaningful in our system is through the use of a gate system—that is, a series of stages or gates where students must successfully pass a portfolio review in order to continue on in their program. Gates in a portfolio system serve a few purposes. First, they provide students with a clear incentive to begin creating their portfolio in their very first course. Second, they provide students an opportunity to have an independent reviewer (i.e., someone other than the instructor of their course) review their work for evidence of learning. Third, the gates provide faculty, students, and staff an opportunity to ensure that every student has demonstrated that he or she has learned the required skills and dispositions to proceed in the program. This becomes really important in programs like ours where students have to complete a capstone experience in a professional setting. In our field, students have to successfully complete a student teaching experience in a K-12 classroom in order to graduate. Nothing is worse than placing a student teacher in a classroom when they are not prepared or ready to be there. The gate system was intentionally designed to serve each of these purposes.

While there are a number of ways a gate system can be used, we designed our system so that each program has two-to-three gates throughout the program (see Figure 1). When students are ready to submit their portfolios for review, all they need to do is to send a request for their portfolio to be reviewed to a person designated as the Portfolio Coordinator—a staff person in charge of assigning reviewers to each portfolio.

Figure 1
Overview of Gate System

Figure 2
Detailed View of a Gate System
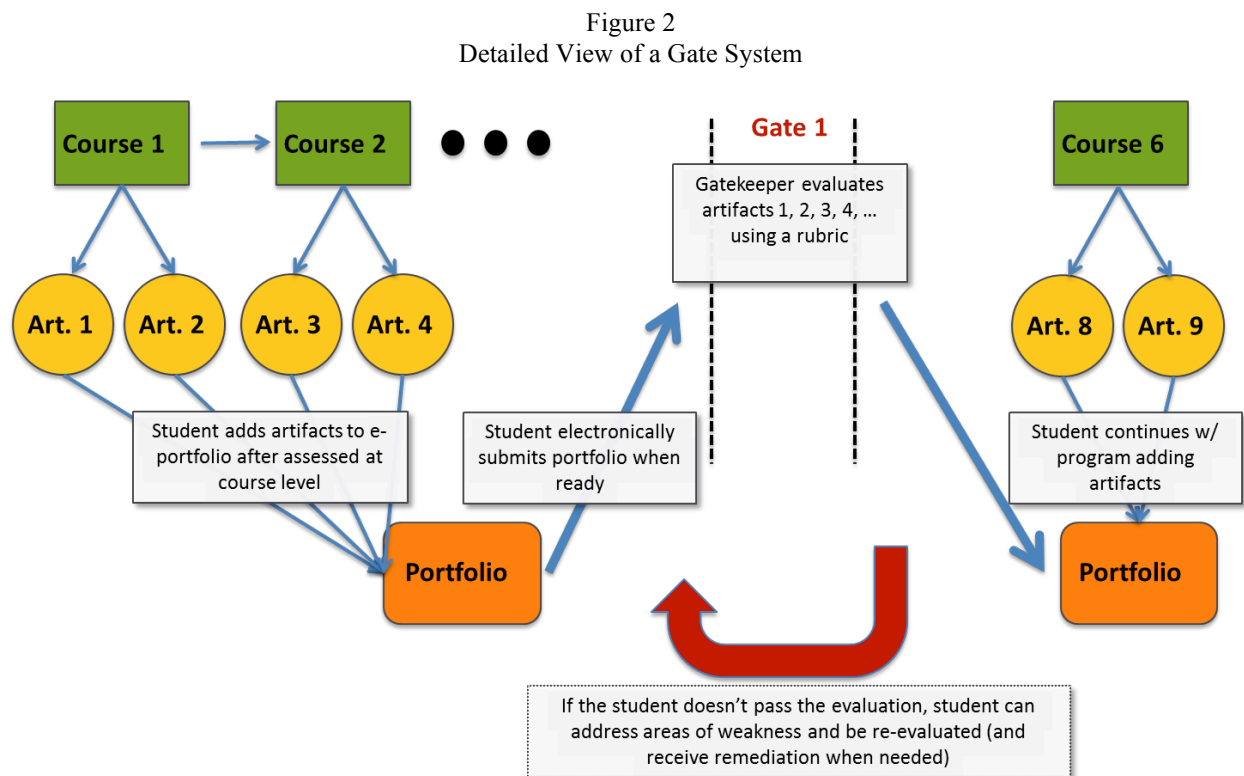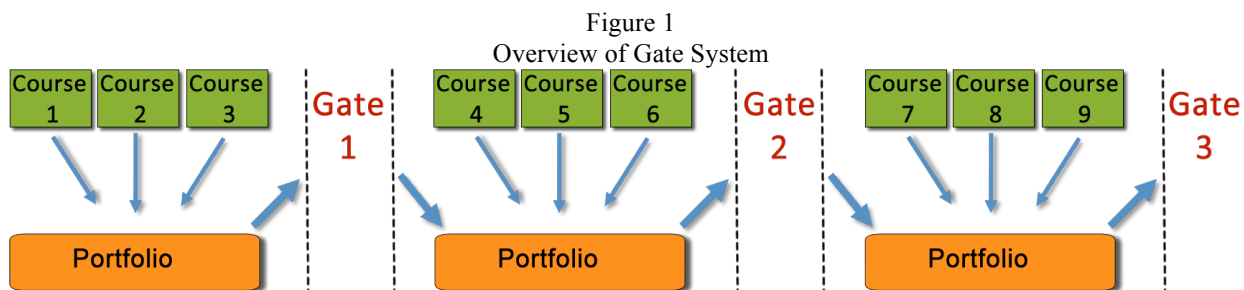
Portfolio coordinator. Faculty already feel overburdened in this age of accountability. A Portfolio Coordinator is a necessary component to a successful gate system—especially in an accelerated program like ours where students can be submitting their portfolios for review every eight weeks. Our system was set up so that once the Portfolio Coordinator receives a request for a portfolio to be reviewed, he or she then assigns an independent reviewer (a faculty member called a "Gatekeeper" which is described in the following section) to review and evaluate the portfolio and follows up to ensure that the review is completed (see Figure 2).

Gatekeepers. One of the problems we found with our previous paper-based summative portfolio process was that faculty were often biased when it came time to evaluate students' portfolios due to prior relationships they had with the students. Therefore a key component

we designed into our assessment and evaluation system was the use of Gatekeepers. Gatekeepers are current faculty members (primarily part-time affiliate faculty members) who have expertise in specific areas related to a specific gate as well as a willingness to serve in the role of a portfolio reviewer (i.e., someone responsible for assessing student portfolios).

Gatekeepers are paid to assess student portfolios for pre-determined content using standardized rubrics in which they have been trained to use. They use a standardized rubric to assess students' individual artifacts; the rubric helps them calculate a cumulative score for each student's portfolio which is used to determine whether the student has met a given standard level of knowledge and performance (appropriate to the student's stage in the program) and can continue on in the program. Specific feedback on the strengths and weaknesses of each artifact and the quality of the

Figure 3
A Gate System Remediation Plan
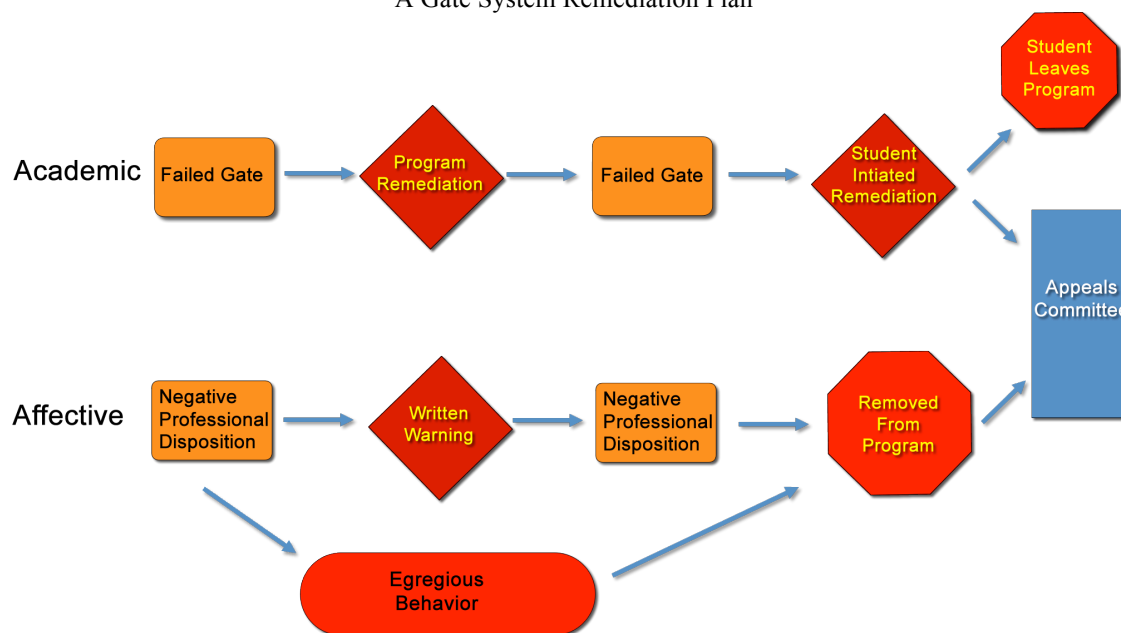
portfolio (as it stands at each gate) are provided to each student after review of their portfolio at each gate.

The rubrics were set up to be completed electronically for each portfolio so that the results could be stored in a central database that can later be mined for reports for accreditation visits as well as faculty, course, and program evaluation purposes. This process also enables Gatekeepers to be periodically assessed for consistency of reviews—which includes comparing their ratings and feedback to other gatekeepers.

Remediation. We recognize though that occasionally students might not pass a given gate for a variety of reasons. If upon first review a student's portfolio does not meet a minimum numerical aggregate score based on the weighted rubric, the student is notified of the failing score, with specific feedback (a copy of the evaluation rubric with evaluator comments), and provided an opportunity to correct errors, weaknesses, etc. (which is referred to as the remediation plan) and resubmit the portfolio for a second review (see Figure 3). If, however, a student's portfolio fails a second review by a second gatekeeper, the student can be removed from the program. Students can also be placed on a remediation plan as the result of a negative professional disposition (i.e., an evaluation completed by either a faculty member or someone in the field about a student's professional demeanor). Students reaching this point—either because their portfolio failed to pass the gate two times in a row or because of negative dispositions—may appeal a decision to be removed from the program.

ePortfolios

As mentioned earlier, none of this would be realistically possible given the accelerated and geographically separate nature of our programs and students in a paper-based portfolio. By requiring students to use an ePortfolio, students are able to do the following:

- begin working on their portfolio at the start of their program;
- collect artifacts (and at times iterations of artifacts) throughout their program;
- have a record of faculty assessments of their artifacts; and
- quickly submit their portfolio for review at any time throughout their program and expect a quick response.

Finally, while the ePortfolio is primarily a combination of a development and assessment portfolio, students can quickly create a showcase portfolio using artifacts of their choice later when it is time to look for a job.

Given these benefits, after reviewing a number of different tools, we selected to use iWebfolio as the ePortfolio platform for our programs. However, we believe our entire system in many ways is not dependent on any single ePortfolio platform and instead can be used with a variety of different tools. We require our students to purchase an *iWebfolio* account

before their first course (see http://www.iwebfolio.com). We identified a preferred first course for each program. In this first course, students are oriented to the portfolio review process and *iWebfolio*. We also provide workshops and other support materials for students year round.

Program, Faculty, and Course Evaluation

The gate system and the larger ePortfolio assessment and evaluation system was designed to enable our administrators the ability to look for trends when students do very well on a certain artifact and similarly when students do not perform well on a certain artifact. Not only can this data provide a means of assessing student learning and performance, it also can provide a means for gauging faculty and course effectiveness (including such things as grade inflation).

Research has shown that student achievement is directly related to teacher quality (Darling-Hammond, 2000). In the past, faculty members have been assessed through a college-wide initial faculty assessment (which, because of its brevity, its failure to authentically represent what happens in a real classroom teaching environment, and because it is a pre-assessment of teaching ability has proven to be inadequate for gauging faculty effectiveness) and through end of course evaluations. But through the systematic collection of student assessment data, faculty—and specifically teacher quality—can now be evaluated in a way like never before.

Data on student performance can be cross-referenced against instructors for the course from which the artifacts were created. This means that, if we begin to notice poor student performance on a given artifact, we can determine if said artifacts are originating in courses taught by specific instructors. Such a finding could suggest that the instructor is failing to teach the content of the artifact sufficiently or that a change in instructional practices is needed. If, however, administrators discover that students across instructors are performing poorly on a given artifact, they can assess the appropriateness of the chosen artifact to the course content, whether or not specific content is being addressed in the course as a whole, whether or not instructors are following the module (i.e., the master course syllabus used by all instructors of a given course), as well as whether or not the artifact chosen for said course or course format needs to be revised.

At the same time, our system was setup to enable us to annually analyze the data collected on how each gatekeeper rates each artifact individually at each gate. By disaggregating this data, the assessment system can provide feedback on inter-rater reliability among gatekeepers and help us determine if changes in gatekeepers, their training, or the rubrics is needed.

This type of data coupled with course grades and end of course evaluations will enable us in the coming years to make data-driven decisions about what improvements need to be made in our programs and courses.

Conclusion and Future Trends

Our assessment and evaluation system—which is built upon the concept of on-going assessment, gates, gatekeepers, and the electronic storage and dissemination of artifacts in an ePortfolio—is still in its infancy. In fact, this new system was officially started about a year ago. Therefore, in many ways it is too soon to assess its effectiveness. However, initial results suggest that overall it is working just as designed. Students are working on their portfolios throughout their programs—beginning with their first course. They are also getting feedback at each gate about how they are performing and any gaps in their knowledge (based on the artifacts submitted). Over time though, it is assumed that courses will need to be updated, artifacts and rubrics improved, and the system management processes tweaked.

Future trends for the improvement of the system include changing, adding to, and eliminating some of the present artifact assignments that are required to be in each ePortfolio. That is, while the overall number one purpose of this assessment and evaluation system is to more effectively assess student learning at different stages (i.e., gates) of each student's program and ultimately to prepare the best teachers possible, we want to ensure that the workload involved in the day-to-day operation of this system remains realistic and manageable. Therefore, just as components can be added and adapted as needed, over time certain things might be dropped if found unnecessary.

References

Alexander, F. K. (2000). The changing face of accountability: Monitoring and assessing institutional performance in higher education. *The Journal of Higher Education, 71*(4), 411-431.

Bauerlein, M. (2008). *The dumbest generation: How the digital age stupefies young Americans and jeopardizes our future (Or, don't trust anyone under 30)*. New York, NY: Penguin Group.

Barrett, H. C. (2007). Researching electronic portfolios and learner engagement: The REFLECT initiative. *Journal of Adolescent & Adult Literacy, 50*(6), 436-449.

Bartlett, A. (2002). Preparing pre-service teachers to implement performance assessment and technology through electronic portfolios. *Action in Teacher Education, 24*(1), 90–97.

Barton, J., & Collins, A. (1993). Portfolios in teacher education. *Journal of Teacher Education, 44*, 200-210.

Bollag, B. (2006). New accreditor gains ground in teacher education (teacher education accreditation council). *The Chronicle of Higher Education, 53*(5), A27.

Brickley, D., Schwartz, A. I., & Suen, H. K. (2000). *Web-based assessment: Validation of electronic portfolios*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans. Retrieved from http://suen.ed.psu.edu/~hsuen/pubs/portfolio.pdf

Chen, H. L., & Black, T. C. (2010). Using e-portfolios to support an undergraduate learning career: An experiment with academic advising. *EDUCAUSE Quarterly, 33*(4).

Cohn, E. R., & Hibbitts, B. J. (2004). Beyond the electronic portfolio: A lifetime personal web space. *EDUCAUSE Quarterly, 27*(4), 7-10.

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives, 8*(1). Retrieved from http://epaa.asu.edu/epaa/v8n1/

Evans, M. A., & Powell, A. (2007). Conceptual and practical issues related to the design for and sustainability of communities of practice: The case of e-portfolio use in pre-service teacher training. *Technology, Pedagogy, and Education, 16*(2), 199-214.

Fiedler, R. L., Mullen, L., & Finnegan, M. (2009). Portfolios in context: A comparative study in two pre-service teacher education programs. *Journal of Research on Technology in Education, 42*(2), 99-122.

Gabriel, T. (2011). More pupils are learning online, fueling debate on quality. *New York Times*. Retrieved from http://www.nytimes.com/2011/04/06/education/06online.html?_r=2&ref=education

Gathercoal, P., Love, D., Bryde, B., & McKean, G. (2002). On implementing web-based electronic portfolios. *Educause Quarterly, 25*(2), 29-37.

Gansemer-Topf, A. M., & Schuh, J. H. (2006). Institutional selectivity and institutional expenditures: Examining organizational factors that contribute to retention and graduation. *Research in Higher Education, 47*(6), 613-642.

Hamilton, J. (2010). Proposed rule links federal student aid to loan repayment rates and debt-to-earnings levels for career college graduates. US Department of Education. Retrieved from http://www.ed.gov/news/press-releases/proposed-rule-links-federal-student-aid-loan-repayment-rates-and-debt-earnings

Hartmann, C., & Calandra, B. (2007). Diffusion and reinvention of eportfolio design practices as a catalyst for teacher learning. *Technology, Pedagogy, and Education, 16*(1), 77-93.

Heinrich, E., Bhattacharya, M., & Rayudu, R. (2007). Preparation for lifelong learning using eportfolios. *European Journal of Engineering Education, 32*(6), 653-663.

Honawar, V. (2007). Teacher-college group presses for single accrediting body. *Education Week, 26*(26). Retrieved from http://www.nctq.org/nctq/research/1175272882368.pdf

Jun, M. K., Anthony, R., Achrazoglou, J., Coghill-Behrends, W. (2007). Using ePortfolio for the assessment and professional development of newly hired teachers. *TechTrends, 51*(4), 45-50.

Keen, A. (2008). *The cult of the amateur: How blogs, MySpace, YouTube, and the rest of today's user-generated media are destroying our economy, our culture, and our values*. New York, NY: Doubleday.

Lin, Q. (2008). Pre-service teachers' learning experiences of constructing e-portfolios online. *Internet and Higher Education, 11*(3-4), 194-200.

Love, D., McKean, G., & Gathercoal, P. (2004). Portfolios to webfolios and beyond: Levels of maturation. *Educause Quarterly, 27*(2), 24-37.

Maher, M., & Gerbic, P. (2009). E-portfolios as a pedagogical device in primary teacher education: The AUT University experience. *Australian Journal of Teacher Education, 34*(5).43-53.

Martinez, R., Liu, S., Watson, W., & Bichelmeyer. (2006). Evaluation of a web-based master's degree program: Lessons learned from an online instructional design and technology program. *The Quarterly Review of Distance Education, 7*(3), 267-283.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. U.S. Department of Education. Retrieved from http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/final report.pdf

Millett, C. M., Payne, D. G., Dwyer, C. A., Stickler, L. M., & Alexiou, J. J. (2008). A culture of evidence: An evidence-centered approach to accountability for student learning outcomes. Princeton, NJ: Educational Testing Service. Retrieved from http://eric.ed.gov/PDFS/ED499994.pdf

Milman, N. B., & Kilbane, C. R. (2005). Directions in electronic portfolio development. *Canadian Journal of Learning and Technology*, *31*, Retrieved from http://www.cjlt.ca/content/vol31.3/milman.html

Murray, F. B. (2000). The role of accreditation reform in teacher education. *Educational Policy, 14*(1), 40-59.

Oppenheimer, T. (1997). The computer delusion. *Atlantic Monthly, 280*(1), 45-62.

Penny, C., & Kinslow, J. (2006). Faculty perceptions of electronic portfolios in a teacher education

program. *Contemporary Issues in Technology and Teacher Education, 6*(4), 418-435.

Reardon, R. C., & Hartley, S. L. (2007). Program evaluation of e-portfolios. *New Directions for Student Services*, (119), 83-97.

Rovai, A. (2003). A practical framework for evaluating online distance education programs. *Internet and Higher Education, 6*(2), 109-124.

Strudler, N., & Wetzel, K. (2005). The diffusion of electronic portfolios in teacher education: Issues of initiation and implementation. *Journal of Research on Technology in Education*, *37*, 411-433.

Strudler, N., & Wetzel, K. (2008). Costs and benefits of electronic portfolios in teacher education: Faculty perspectives. *Journal of Computing in Teacher Education, 24*(4), 135-142.

Treuer, P., & Jenson, J. D. (2003). Electronic portfolios need standards to thrive. *EDUCAUSE Quarterly, 26*(2), 34-42.

Wade, R. C., & Yarbrough, D. B. (1996). Portfolios: A tool for reflective thinking in teacher education? *Teaching and Teacher Education, 12*(1), 63-79.

Wall, K., Higgins, S., Miller, J., & Packard, N. (2006). Developing digital portfolios: Investigating how digital portfolios can facilitate pupil talk about learning. *Technology, Pedagogy, and Education, 15*(3), 261-273.

Ward, C., & Moser, C. (2008). E-portfolios as a hiring tool: Do employers really care? *EDUCAUSE Quarterly, 31*(4).

Wetzel, K., & Strudler, N. (2006). Costs and benefits of electronic portfolios in teacher education: Student voices. *Journal of Computing in Teacher Education, 22*(3), 99-108.

Williams, M., Wetzel, K., &. Wilhelm, L. (2004). Trials and tribulations of reflective practices in pre-service teacher electronic portfolios. In C. Crawford, N. Davis, J. Price, & D. Willis. (Eds.), *Technology and Teacher Education Annual* (pp. 301–306). Norfolk, VA: Association for the Advancement of Computing in Education.

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Growing a New Culture of Assessment:
Planting ePortfolios in the Metro Academies Program

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San Francisco State University and City College of San Francisco

This paper provides a look at the development of a new culture of assessment in higher education with the use of electronic portfolios (ePortfolios). It uses the metaphor of horticulture to describe how an inter-institutional program, Metro Academies of Health, has gone through the first two parts of the ePorticulture cycle—preparing for the use of ePortfolios and planting the first ePortfolio "seeds" within cohorts of students at both an urban community college and 4-year state university. Metro serves as a case study for potentially rich, albeit challenging, ePortfolio integration within a program that serves primarily low-income, first-generation college students. Given the chronically poor outcomes of many of today's college students, ePortfolios operate as a high-impact practice that provides students and educators with a tool for assessment to improve academic success. Metro aims for a successful and strategic ePortfolio implementation by beginning with a foundation of research on best practices and gives a series of recommendations that apply to new or growing ePortfolio programs.

For centuries, educators have been experimenting with the science and art of promoting, collecting, and assessing student work—just as horticulturalists have explored improvements in the cultivation of plants. While horticultural practices have evolved into an extremely complex science, so too has our potential to use new tools and technologies to nurture and harvest a wider range of student work. Dependence on standardized assessment strategies as the primary means of harvesting student knowledge often does not adequately prepare students for the ever-changing future.

Wardlaw (2006) made the case that expectations for learning have changed in response to a new global context, requiring students to gain skills in communication, teamwork, problem solving, analysis, reflection, performance improvement, innovation, and lifelong learning, among other things. However, curriculum design has changed only marginally since the start of the modern academy in the Renaissance period. Emerging socio-technology trends must play a wider role in influencing changes in curriculum design going forward. Darling-Hammond (2009) stated that on-demand and curriculum-embedded assessments should be used together to "measure the full range of knowledge and skills represented in standards" (p. 29). We believe that learners must be guided toward clear, concise academic learning outcomes and, like Darling-Hammond, that good practice in comprehensive assessment will require a wider variety of assessment strategies over time.

The Complexity and Culture of Assessment

The attitudes and practices underlying how disciplines expect students to demonstrate their learning varies radically—from high-stakes testing to observation/demonstration to comprehensive portfolios.

Cultivating a common cultural approach to curriculum and assessment has proven to be a significant, ever-present challenge. Yet the Association of American Colleges and Universities (AAC & U, 2009) believes that "to achieve a high-quality education for all students, valid assessment data are needed to guide planning, teaching, and improvement." They also advocate for well-planned electronic portfolios that can "provide opportunities to collect data from multiple assessments across a broad range of learning outcomes while guiding student learning and building self-assessment capabilities and eportfolios" and "assessment of work in them can inform programs and institutions on progress in achieving expected goals" (AAC&U, 2009).

In 1993, early research on ePortfolios from the Coalition of Essential Schools and the Annenberg Institute for School Reform identified five core factors to consider when exploring the successful planning and implementation of electronic portfolios: vision, assessment, technology, logistics, and culture (Niguidula, 1997). While the ePortfolio movement has evolved and grown dramatically, consideration of all of these basic factors still makes sense. We have learned a lot about what it takes to nurture and harvest a good "crop" of portfolios in our experience of working on ePortfolio development within a large public university. While there are many factors that may determine the success or failure of comprehensive assessment, we believe that the most essential element that needs to be planted is that of shifting, re-defining, or adapting the existing culture of assessment.

Advancing Change in Educational Assessment at San Francisco State University

New digital technologies like electronic portfolios have opened the way for profound changes in

educational assessment. Since 2005, San Francisco State University (SF State) has been developing resident expertise and organizational capacity to support and advance the development, use, and sustainability of electronic portfolio tools. Academic Technology, in conjunction with participating colleges and departments, offers on-going consultation, support, and training for both students and faculty on the creation of ePortfolios at both the undergraduate and graduate levels. ePortfolios are now used as a full or partial comprehensive, formative/ summative assessment strategy within 22 of 75 departments. Over the past six years working with a variety of departments, we've discovered that elements of the "ground-work" phase—e.g., preparation, faculty buy-in, shared planning, and cultural change—are often the most challenging yet important aspects of launching a successful ePortfolio project "planting" or implementation.

This case study examines a unique opportunity to collaborate on the structure, design, reflection strategies, and practical applications for an emerging project— the Metro Academies. The Metro Academies is a reformed approach to the first two years of college that may be completed in both community colleges and four-year universities. Metro Academies uses an ensemble of high-impact educational interventions spotlighted by AAC&U. The project goals are the retention of community college and university lower division students; successful transfer for community college students; and accelerated mastery of rigorous knowledge and competencies in key foundation areas— writing, quantitative thinking, public speaking, and critical thinking. Demonstration sites are currently operational at City College of San Francisco (CCSF) and SF State, the first time Academic Technology has worked with a partnership of this kind.

Despite SF State's broad experience with ePortfolios, Metro represents a new challenge. Not only it is a small undergraduate program for first- and second-year college students, many of whom are low-income, first-generation college, but the program also spans across two institutions and aims to develop a deeply developmental ePortfolio in already content-rich courses. This unique program offers great challenges, but also great opportunities for a rich integration of ePortfolios.

The ePorticulture Cycle

The redesign of comprehensive evaluation methods occur across several aspects of the educational process, with the most significant taking place within the culture of assessment. To that end, Kelly and Cox (2011) coined the term "ePorticulture":

The act or custom of learning, developing intellectually and professionally, and transmitting knowledge through the creation, review, and assessment of authentic, reflective, and integrative student work that is shared over time via electronic portfolios.

Etymology: **e** (electronic) + **portfolio** (a selection of a student's work compiled over a period of time and used for assessing performance or progress) + **culture** (the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations).

Just as the cycle of plant growth in horticulture has four components—1) preparing the soil, 2) planting seeds or transplanting plants, 3) growing or maintaining the plants, and 4) harvesting—so too does the ePorticulture cycle. Applying this metaphor to ePortfolio implementation in the Metro Academies, the program is "preparing the soil" by building faculty buy-in, garnering institutional support, and encouraging students to begin to think about and articulate their academic and professional identities. To "plant the seeds," the program is adopting the ePortfolio technology and developing processes. These processes include creating assignments that both align with class and program objectives, and provide opportunities for students to reflect on how their work relates to their goals of transfer and degree completion. "Growing and maintaining the plants" is analogous to navigating the ongoing logistics involving user motivation, training, and general technological and pedagogical support. Lastly, the "harvest" occurs when ePortfolios are created and shared. Producing a "crop" of ePortfolios that stakeholders can see helps build further support for additional investment and "planting."

This article will describe how an inter-institutional program, Metro Academies of Health, has gone through the first two parts of the ePorticulture cycle—preparing for the use of ePortfolios and planting the first ePortfolio "seeds." In one or two years, the authors plan to write a follow-up article to describe how the Metro program has grown and maintained ePortfolios, and harvested student work as participants transfer to the four-year institution or achieve their degree goals.

Preparing for ePortfolios in Metro Academies: Emerging Socio-Technology Trends and High-Impact Practices

To help the Metro Academies plan and "prepare the soil" to grow and maintain ePortfolios, Metro drew on earlier experiences at SF State, and researcher Alycia Shada conducted a comprehensive review of five case studies in the wider literature about program-level ePortfolio implementation efforts. Shada followed

Figure 1
Sequence and Pairing of Metro Courses
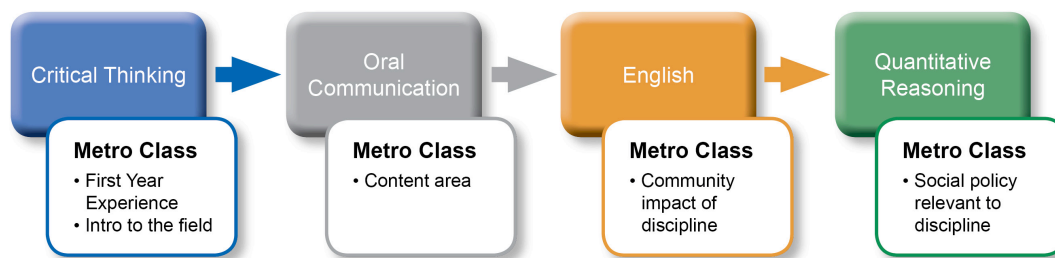
Source: Metro Academies

the review with interviews of ten faculty members—representing five programs across the SF State campus (2011). This article incorporates a look at why ePortfolios are an important component to the Metro Academies, and overall recommendations for implementation.

Why ePortfolios in the Metro Academies?

Wilmarth (2010) claimed, "The case can be made that, at the dawn of the 21st century, converging technologies and emerging social trends lay the groundwork for entirely new societal landscapes." These new landscapes can be found in the very meaning of the work we do and the lives we lead, and ultimately in the what, where, why, and how we learn. In the preparing and planting phases of ePorticulture, a program can use ePortfolios to address a current and emerging need—i.e., for students to have an environment in which they can collect, select, reflect upon, build, and publish a digital archive of their academic work to selected audiences.

ePortfolios represent a potential key to open closed doors between disciplines, making transparent the expectations, values and goals that educators expect of students. Through the growing and harvesting phases of ePorticulture, ePortfolios also represent an opportunity for academia to help students to bridge their learning with the creation of a professional persona and a demonstration of work-force readiness. Metro's vision is "to increase equity in college completion through engaging, supportive, rigorous, and socially relevant education" (Metro Academies, 2011). Metro aims to improve graduation rates for low-income, first-generation college students as well as improve the quality of their college academic experience. Metro accomplishes this by creating small learning communities of students who take paired courses together; generally a health education course partnered with a general education course that is infused with health-related content (see Figure 1). With a faculty that is committed to pedagogy and building a community of learners, Metro has become an ideal planting ground for a culture of ePortfolios.

Students today are adept at representing themselves informally on the web through social networking, yet have rarely considered creating a more formal, academic identity through a published web-portfolio. We have observed how ePortfolios can serve as a tool to foster reflective learning, helping students build academic identity, make connections across coursework and various aspects of their lives, and allow for formative assessments by faculty and advisors. The Metro project represents an opportunity to actively apply some of our earlier experience and learning.

The Context and Responsibility to Underrepresented Students

The Metro program was developed in response to chronically poor outcomes of today's college students—in terms of both low and inequitable college completion and the lack of development of academic skills. California was once considered a leader in providing access and excellence in higher education, but it has now fallen to have some of the worst college outcomes in the country. A recent report by the Public Policy Institute of California (PPIC) showed that community college transfer rates are low and "only about half of [California State University] students earn a bachelor's degree within six years" (Johnson & Sengupta, 2009).

Strategically working to improve students' academic outcomes is more important than ever. Overall, underrepresented students (particularly low-income students and students of color) have had very low rates of college completion and are a growing population (Offstein, Moore, & Shulock, 2010). According to a recent study of California community college students, only 31% of students "completed a certificate or degree, or transferred to a university within six years of enrolling" (Shulock & Moore, 2010). The study also found that underrepresented minority students (who are often low-income, first-

generation college-going) made up only 30% of the students who successfully completed college, whereas they made up 43% of the "incoming degree seekers." Furthermore, Latino students were "only half as likely as white students to transfer (14% to 30%)" and "black students were also less likely than white students to transfer (20% to 29%)" (Shulock & Moore, 2010). One unique aspect of the Metro program is the cross-institutional partnership between the community college and the CSU. This collaboration could lead to new ways of thinking about using ePorfolios as a transfer tool and has implications for new ways to integrate between 2-year and 4-year colleges. Metro aims to show how effective interventions, such as the use of electronic portfolio, when cultivated with intention, can help improve college completion for these student populations.

The Philosophy Behind Metro and Inclusion of ePortfolios as a High-Impact Practice

Metro's program model is centered on several of the Association of American Colleges and Universities' (AAC&U) high-impact practices. "High-impact practices" are educational practices that have proven to be extremely effective in creating positive results for "students from widely varying backgrounds" (Kuh, 2008, p. 1). These practices have shown to be particularly effective for historically underserved students and those who enter higher education with lower test scores than their peers. These practices include strategies such as learning communities, writing-intensive courses, collaborative assignments and projects, and first-year seminars. The most recent addition to the list was the use of ePortfolios (Rhodes, 2011).

The program's emphasis on accelerated learning addresses the fact that up to 75% of community college students and more than half of public university students arrive on campus with test scores indicating that they are not fully prepared for college work (Shulock, 2010). As a broader aim, Metro Academies seeks to develop leadership and employment capacity among people in low-income urban communities, displaced workers, and working adults. Participation in this initiative is geared towards those interested in a career in public health, but can also lay the groundwork for movement into a number of fields. With their general education requirements complete, students move on a fast track to majors such as Health Education, Sociology, Child and Adolescent Development, Urban Studies, Political Science, Recreation and Tourism, and Psychology. Metro Academies is designed to help students transfer to the California State University (CSU) system.

Studies related to improving overall transfer rates and the students' transfer experience itself recommend a variety of strategies, several of which Metro Academies has instituted or has begun to institute. Key strategies include, but are not limited to, the following:

- *Creation of inter-institutional programs to facilitate transfer*: Inter-institutional partnership programs like Metro create a seamless experience for students (Balzer, 2006). The Metro Academies program has become a model for other inter-institutional projects. The Metro curriculum—including health-infused general education courses paired with lower-division health education courses—is designed to prepare students for transfer, as well as for entrance into a variety of majors such as Health Education, Urban Studies, or Social Work.
- *Involve transfer students sooner as members of the four-year campus community*: After conducting transfer student interviews, Flaga (2002) recommended that four-year campuses "address those students' needs to adapt to a more decentralized support environment than community colleges generally provide" (Kelly, 2009). Metro provides students exposure to various aspects of the four-year campus, ranging from virtual environments like ePortfolios to physical environments through orientations, program meetings on both campuses, and introductory visits to SF State during the semester prior to transfer.
- *Addressing social integration needs of transfer students*: Gumm (2006) identified social integration as an important variable for predicting both a) students' decisions to remain in school (99.1% correct) and b) commitment to academic goals and the institution itself (99.7% correct for predicting persisters). By using a cohort model, Metro provides social integration opportunities from the beginning, as cohort members will have each other as a support network after transfer, as well as a network of faculty who help facilitate their integration into their junior year.
- *Use ePortfolios to facilitate the transfer process*: Kelly (2009) recommended that discipline-specific programs should provide ePortfolios for students to showcase that they had met specific requirements (e.g., general education, program prerequisites). Students could also demonstrate skills or experiences related to their intended field of study after transfer. Metro Academies students begin using ePortfolios in their first semester of the two-year program (see next section for more details).
- *Increased utilization of and communication between advisors at all institutions*: Researchers and transfer students themselves outlined the

importance of advisors and the need for increased communication between advisors from two-year and four-year institutions (Kisker, 2007; Flaga, 2002). Metro faculty members from both institutions meet regularly to discuss curriculum, the use of ePortfolios, increasing student success, and more.

Potential Benefits of ePortfolios for Metro Participants

Despite the grim statistics, we have hope for improving the outcomes of our students. Several recent studies have shown that students who use ePortfolios tend to have higher retention rates, higher GPAs, higher course pass rates, and significantly higher levels of engagement (Yancey, 2009; Clark & Eynon, 2009; Kirkpatrick, Renner, Kanae, & Goya, 2009). After a study conducted at LaGuardia Community College (LGCC) in New York, Clark & Eynon (2009, p. 21) found that

> Data gathered using the Community College Survey of Student Engagement show that students in e-portfolio-intensive courses at LaGuardia are more likely to show high degrees of engagement with critical thinking, collaboration, and writing. Analysis of course pass rates and semester-to-semester retention also show higher rates of success for students in e-portfolio-intensive courses, compared to students in similar courses that do not use e-portfolios.

Challenges in Implementing ePortfolios

ePortfolios can provide many services and function as a multi-faceted tool. Research shows many profound benefits for students, instructors, and higher education in general. However, little research has been able to definitively say what exactly it is about ePortfolios that make them "work" nor has it been able to isolate certain components to producing certain benefits (Yancey, 2009); however, it seems that comprehensive, well-integrated ePortfolio systems serve important purposes as both a process and a product.

Although ePortfolios are deeply integrated into many institutions' curriculum and culture, in many cases their implementation falls flat. Levels of integration vary and can range from being fully vetted throughout an institution and supported by a statewide initiative (Clark & Eynon, 2009) to sometimes only showcasing a couple of assignments in a few classes (Cambridge, Cambridge, & Yancey, 2009). ePortfolios represent a variety of complex objectives, various stakeholders, and a range of ways in which users' processes and skills must change in order to use the system effectively.

In "The 'Sticky' ePortfolio System," Ali Jafari (2004) claimed that ePortfolios "will become a fully implemented, successful tool…[and] will play a significant role in higher education. However… developing and implementing a successful ePortfolio project—one that is 'sticky,' one that works and is adopted by users—will first involve many challenges" (p. 38). Bret Eynon, leading scholar and driver of ePortfolios at LGCC, said that ePortfolio systems often "briefly bloom and fade" and that some of the challenges to ePortfolios' sustainability are their "sophisticated learning design," that they often "break traditional boundaries of curriculum and pedagogy," and that they are a "disruptive pedagogy"—meaning their success implies and often requires "broad institutional collaboration and change" (Eynon, 2011). Translating Eynon's thoughts to our ePorticulture metaphor, institutions, programs, and individual instructors must do more to prepare the ground pedagogically and support students as they grow and maintain competencies-based evidence. Only then will the blooms last, pollinate, and become fruit for advisors or prospective employers.

As noted earlier, the ePorticulture preparation phase is both critical and difficult. Chen and Light (2010) pointed out in *Electronic Portfolios and Student Success*, "the value of e-portfolios lies not in the specific tool itself, but in the process and in the ways in which the concept and the related activities and practices are introduced to students" (p. 27). This suggests the importance of the ways in which an ePortfolio system is integrated into the curriculum and pedagogy. Simply adopting the tool is likely not enough to affect real educational change. Additionally, Kathleen Yancey warned, "the inability to get students engaged or excited about their e-portfolios will result in a flawed implementation" (Yancey, 2009). Therefore, as programs "prepare the ground," they should include planning time to determine how they will help students find meaning through reflective writing, and help faculty use ePortfolios for assessment and advising.

While Metro provides an ideal planting ground for ePortfolios, it also holds many challenges. Institutional resources are scarce, the needs and resources of faculty vary by course and institution, and students often enter the program requiring remediation and have vast disparities in technical skills. Furthermore, the program does not have a strong culture of technology and substantial changes will need to be made by instructors, students, and program administrators to support the implementation of ePortfolios. The challenges Metro faces however are not unique—successful and sustainable implementations are difficult. As part of the critical preparation phase, Metro leaders and Academic Technology team members have begun to work with a

small group of Metro faculty from both institutions. Together, they will simplify the technology transition for faculty and students, and improve the pedagogical connections through the alignment of key assignments and the development of reflective writing prompts.

Planning for a Successful Planting of ePortfolios

Metro's Current Status with ePortfolios

Throughout the 2010-11 academic year, instructors of Metro's core courses—lower division courses in the Department of Health Education—made ePortfolio accounts available to their students. SF State currently supports only one ePortfolio software platform—eFolio. Because eFolio has worked well for the university's various programs and departments, Metro will continue to only offer this one platform. The students and instructors had approximately one ePortfolio workshop with Academic Technology and most have uploaded a couple of academic artifacts to their ePortfolio. In general, however, this first pass at issuing ePortfolio sites was not integrated into the curriculum and the support and goals at the program level were unclear.

With the support of a FIPSE Connect to Learning mini-grant, the Metro Academies faculty began a series of meetings in the 2011-12 academic year that address the integration of ePortfolios into their curricular design to support integrative learning and reflection. These developments provide a fresh start for the project. We see the use of ePortfolios in Metro as a way to develop meaningful prompts and to track and evaluate student progress in challenging general education subjects such as English and math. By "planting and maintaining" their ePortfolios, community college students in the Metro Academies cohorts will document their developing academic skills (academic artifacts), professional and life experience, interests, and co-curricular skills. In helping students grow ePortfolios and prepare for harvesting by different stakeholders, advisors and faculty will also use the portfolios in formative advising and for career development. This guidance will be especially important for those who need a successful early harvest—those students transferring from CCSF to SF State (or other CSU campuses).

Metro leadership and Academic Technology staff introduced the new ePortfolio project to the all-faculty meeting at the beginning of the 2011 spring semester. Following this meeting, eleven faculty members completed an anonymous open-ended survey, geared at determining faculty values and attitudes about using the ePorfolio in their own classrooms. The survey was administered in follow-up faculty meetings, after participants had an opportunity to reflect on the

introduction to the ePortfolio tool and project. The survey planted the following questions:

1. What are some things that excited you about using the ePortfolio tool in the classroom?
2. What are some things that cause anxiety in using the ePortfolio tool in the classroom?
3. What specific support can you anticipate needing around ePortfolios?

Qualitative responses were transcribed onto one document, indexed and coded for salient themes. In general, instructors indicated excitement over the possibilities of student learning and reflection, as well as the ability to showcase work. Instructors indicated anxiety around issues such as dealing with the technology (learning it as well as having adequate access to it), the overall time commitment, and having adequate support to deal with students' varying learning curves. They anticipated needing support around the integration of ePortfolios into the curriculum and readily available tech support (e.g., quick responses and drop-in hours; Shada, 2011).

With this information, Metro is developing a strategic implementation plan that can lead to a successful and sustainable integration of ePortfolios into the curriculum and overall program. Because implementing ePortfolios into the program and curriculum can be a substantial undertaking, it is particularly important to think through the inputs (planting), activities (growing), expected outputs and outcomes, as well as the intended overall impact (harvesting). This exercise can help surface any underlying assumptions of the stakeholders and help clarify objectives and expectations. The logic model can also be revisited and revised during and after implementation and is intended to serve as a guide for discussion among Metro's leadership and faculty rather than a comprehensive model.

ePortfolio Lessons Learned and Applied to Metro

Over the years, when working with a variety of departments, we have noted that the most successful programs have been those that have an identified and required beginning and completion course tied to ePortfolio use. The sequential structure of the Metro program will allow Academic Technology to "plant" or issue ePortfolio accounts to all students through "gateway" courses on both campuses, promote full-faculty buy-in on requiring the timely uploading of "signature" assignments each term, and require finishing the portfolios in a capstone course.

Recommendations for Metro

Based on Shada's research, we make the following recommendations at the institutional, program, and course levels for preparing the ground and planting seeds within Metro's ePortfolio implementation. Regarding best practices, Metro faculty can learn from one another as well as from other instructors who have pioneered ePortfolio programs at SF State. Shada's research resulted in a collection of best practices throughout the institution (see Appendix A for details).

Institutional Level

Strategically discuss critical issues with key stakeholders. Collectively make decisions with key stakeholders, particularly faculty and leadership team and continuously seek their involvement in on-going decision-making processes. Understand their needs, interests, and concerns. Understand their language and how ePortfolios can help them. Topics to discuss include:

- Definition/s, objective/s, and goals of ePortfolios; clarification of process and roles
- Assignments to go into the ePortfolios (which assignments and how many artifacts for each competency)
- How to adapt the VALUE rubric appropriately for the program's needs
- Identification of external stakeholders, or perceived external stakeholders and plan for communicating with them (e.g., talk to leaders in impacted majors at SF State, talk to SF State advising office—would they use ePortfolios? What would they like to see in them?)
- Feedback on success and/or concerns of implementation and overall project
- Perceived benefits of ePortfolios

Provide resources. Create documents to serve as information and resource guides for instructors and students. Content should include important contact information, log-in and troubleshooting information, and where to go for different issues, as well as a brief overview of the purpose and structure of the ePortfolios. In addition, compile documents with sample assignments, assignment instructions, writing prompts, and grading rubrics.

Allow time. Allow time for instructor and student work and provide resources. Instructors will need time to revise their syllabi and potentially make pedagogical shifts. Students and instructors will both need time to learn the technology. Students will need time to reflect. The program will need time to create and refine the data collection process for evaluation of the ePortfolio

program. Hosting workshops and meetings may be effective ways to give stakeholders (both students and faculty) time to do some of this work. Provide opportunities for stakeholders to reflect and communicate.

Provide support to instructors and students. Provide support staff and identify one "go-to" person for additional support. Consider providing support staff via faculty peers and student assistants—this may be more cost effective and will help enhance the ePortfolio culture as well as help empower individual stakeholders. Provide support in multiple ways, including group workshops, mentoring in the classroom, instructional materials, and one-on-one help. Trainings should be ongoing and also made available to new hires. Provide stipends if/when possible.

Be flexible, but strategic. Begin with instructors who have an interest and allow initial implementation to be uneven. Plan meetings strategically—make sure that the timing works for faculty schedules and needs and ensure that the meetings are "timely, well-taught, and designed for appropriate stages of concern and levels of use" (Brzycki & Dudt, 2005). Reiterate that the project will maintain flexibility and revisit program matrices, and keep a focus on long-term goals. Allow for a flexible implementation, but provide some structure and accountability for the project participants.

Program Level

Implement incrementally. Initially, implement more fully in the gateway and capstone courses, but also begin to plan to make it a developmental ePortfolio and determine what that means for the "in-between" courses and/or the program. Consider if the ePortfolio will be reinforced outside of Metro's current courses (e.g., in workshops, orientation, end-of-program celebration, advising sessions, etc.).

Provide resources to help instructors make pedagogical shifts. Provide sample prompts and assignments for teaching reflection, scaffolding reflection, and writing reflective prompts. Encourage "best practices" among instructors for teaching reflection.

Develop a plan for program assessment. Develop a timeline with leadership staff for assessing overall achievement of program learning outcomes and determining how curriculum and/or pedagogy may adapt in response to this data. Be mindful of possible conflicts in goals related to student learning and goals related to program assessment.

Integrate into advising. During every advising session, have the advisor open up the student's ePortfolio.

Provide tailored support to some students and faculty. Decide how to support students who are less

comfortable with technology. Perhaps they can schedule one-on-one sessions with Academic Technology, or with the program's ePortfolio "go-to" person. Provide clear and quick technological support, particularly to CCSF students and instructors. Identify and continuously address CCSF-specific barriers to ePortfolio development.

Create a culture of making connections, setting goals, and envisioning a future self. Incorporate the concept behind ePortfolios into the culture of the program. Discuss "making connections," "looking forward/envisioning a future self," and "goal setting and revising" throughout the program.

Understand the external audiences. Communicate with potential external audiences to determine external validity of the ePortfolios (e.g., determine if perceived benefits are true).

Provide documentation of the basics. Provide documentation for instructors, students, and leadership. Documentation will help communicate the resources and support that it is available and provide consistency in communication of goals and objectives of the ePortfolio project.

Plan long term. Clarify goals regarding having a developmental ePortfolio and how that may affect program capacity; develop a strategic plan to achieve this. Consider ways for the program to alleviate the time commitment required of individual instructors (e.g., create a peer mentor program, hire student assistants). Provide a formal way for students to showcase their ePortfolios.

Course Level

Make room for new curriculum. At the course level, anticipate challenges with finding "extra" time in already content-rich courses. Curriculum may need to be taken out of the courses, particularly in the gateway or capstone courses.

Allow some autonomy in course-level integration. Allow instructors the autonomy to decide if they want to incorporate the ePortfolio throughout the entire semester or isolate it as its own activity.

Encourage best practices. Facilitate and encourage "best practices" conversations among the faculty.

Use a common rubric. Collectively adapt and continue to adapt the VALUE (or another commonly agreed-upon) rubric to evaluate each student's overall ePortfolio. Determine at what point/s the overall ePortfolio will be graded.

Use peer review. Incorporate peer review processes into the assessment.

Begin with an autobiography and goals statement. Have students begin the ePortfolio process by writing some form of intellectual/academic biography and goals statement. Encourage them to "reflect on their education and think about [their] dreams" (SF State instructor) and think about their skills, strengths and weaknesses. Have them revisit these throughout the program.

Determine flexibility in proof of competencies. Decide whether or not students may include non-Metro coursework as proof of competencies. Decide how to handle allowing artifacts to represent a variety of mediums (e.g., written documents, slideshows, video presentations, lab reports, spreadsheets, art, music).

Integrate ePortfolios into course theme. Encourage instructors to integrate the theme of the ePortfolios into what they are already doing. Avoid making the ePortfolio an "add on."

Focus on process, not product. Remember that the process of creating an ePortfolio is often when students experience the most benefit. Emphasize and make time for the process and understand that the final product does not necessarily need to be "perfect."

Conclusion

With the active support of Metro Academies faculty and administration, we have been presented with the opportunity to cultivate a common cultural approach to curriculum and assessment. The Association of American Colleges and Universities (2009) outlined that "to achieve a high-quality education for all students, valid assessment data are needed to guide planning, teaching, and improvement" and that "good practice in assessment requires multiple assessments, over time." They also advocate for well-planned electronic portfolios that can "provide opportunities to collect data from multiple assessments across a broad range of learning outcomes while guiding student learning and building self-assessment capabilities and eportfolios" and "assessment of work in them can inform programs and institutions on progress in achieving expected goals" (AAC & U, 2009). As the analogy of ePorticulture continues to play out within the Metro Academies, the preparation is underway for a new integration of ePortfolios across two institutions. The hope is that planting the portfolios soon makes way for deep reflection and growth of the student experience throughout their four years in higher education. We will continue to document our collective efforts as we complete the first two ePorticulture phases and begin the next two—how we grow and maintain the program's efforts, how the individual students grow and maintain their ePortfolios, and how all the stakeholders review and harvest their work in different contexts. We hope to identify more guidelines that other programs may find useful as they seek to grow their own cultures of assessment.

References

The Association of American Colleges and Universities. (2009). VALUE: Valid assessment of learning in undergraduate education. Retrieved from http://www.aacu.org/value/

Balzer, J. (2006). Community college and university degree partnership programs: A study of the student experience. Unpublished doctoral dissertation, Oregon State University, Corvallis, Oregon.

Cambridge, D., Cambridge, B., & Yancey, K. (2009). *Electronic portfolios 2.0: Emergent research on implementation and impact*. Sterling, VA: Stylus.

Chen, H., & Light, T. P. (2010). *Electronic portfolios and student success: Effectiveness, efficiency, and learning*. Washington, DC: Association of American Colleges and Universities.

Clark, J. E., & Eynon, B. (2009). E-portfolios at 2.0-Surveying the field. *Peer Review*, *11*(1), 18-23.

Darling-Hammond, L. (2009). Lessons from abroad: International standards and assessments. A webinar presented for Edutopia and the Stanford Center for Opportunity Policy in Education in collaboration with the Council for Chief State School Officers.

Eynon, B. (2011). *Making connections: ePortfolio, collaboration & change.* Presented at the Association of American Colleges and Universities e-Portfolio Forum 2011, San Francisco, CA.

Flaga, C. T. (2002). The process of transition for community college transfer students. Unpublished doctoral dissertation, Michigan State University, East Lansing, Michigan. (ERIC Document Reproduction Service No. ED482192).

Gumm, J. E. (2006). Transfer transitions: First semester experiences of transfer students at selected Texas Christian universities. Unpublished doctoral dissertation, Baylor University, Waco, Texas. Retrieved from http://hdl.handle.net/2104/4193

Jafari, A. (2004). The "Sticky" ePortfolio system: Tackling challenges & identifying attributes. *EDUCAUSE Review*, *39*(4), 42.

Johnson, H., & Sengupta, R. (2009). *Closing the gap: Meeting California's need for college graduates.* Sacramento, CA: Public Policy Institute of California.

Kelly, K. (2009). Student perceptions of the higher education transfer process from two-year to four-year institutions: A qualitative study viewed through the lenses of student departure, social network, and complexity theories. Unpublished doctoral dissertation, University of San Francisco, San Francisco, California. Retrieved from UMI Open Access: http://gradworks.umi.com/33/70/3370305.html

Kelly, K., & Cox, R. (2011). ePorticulture: Growing a new culture of assessment. In D. Cambridge (Ed.), *Global diffusion of e-portfolio: Solutions for collaborative education (in press)*. Hershey, PA: IGI Global.

Kirkpatrick, J., Renner, T., Kanae, L., & Goya, K. (2009). A values-driven eportfolio journey: Na wa'a. *Electronic portfolios 2.0: Emergent research on implementation and impact* (pp. 97-102). Sterling, VA: Stylus.

Kisker, C. B. (2007). Creating and sustaining community college-university transfer partnerships. *Community College Review, 34*(4), 282-301.

Kuh, G. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Washington, DC: Association of American Colleges and Universities.

Metro Academies. (2011). *Metro Academies Initiative flier*. Retrieved from www.metroacademies.org

Offstein, J., Moore, C., & Shulock, N. (2010). *Advancing by degrees: A framework for increasing college completion*. California State University, Sacramento. Institute for Higher Education Leadership & Policy and The Education Trust.

Niguidula, D. (1997). Picturing performance with digital portfolios. *Educational Leadership, 55*(3), 26-29.

Rhodes, T. (2011). *Show me the learning: E-portfolios and VALUE*. Presented at the Association of American Colleges and Universities Annual Meeting 2011, San Francisco, CA.

Shada, A. (2011). Electronic portfolio implementation in the Metro Academies program at San Francisco State University and City College of San Francisco. Unpublished master's thesis. Mills College, Oakland, California.

Shulock, N. (2010). *Beyond the rhetoric: Improving college readiness through coherent state policy*. California State University, Sacramento. Institute for Higher Education and Leadership Policy and the Southern Regional Education Board.

Shulock, N., & Moore, C. (2010). *Divided we fail: Improving completion and closing racial gaps in California's community colleges*. California State University, Sacramento. Institute for Higher Education and Leadership Policy.

Wardlaw, C. (2006). Mathematics in Hong Kong/China. Improving on being first in PISA. Paper presented at the 50th Annual Meeting of the Australian Mathematical Society, Sydney, Australia.

Wilmarth, S. (2010). Five socio-technology trends that change everything in learning and teaching. In H. Hayes Jacobs (Ed.), *Curriculum 21: Essential education for a changing world*. Alexandria, VA: ASCD.

Yancey, K. B. (2009). Electronic portfolios a decade into the twenty-first century: What we know, what we need to know. *Peer Review, 11*(1), 28-32.

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Acknowledgements

Appendix A:
Summary of Best Practices from Faculty Interviews

For the faculty interview component of her research, Shada asked the following series of questions in approximately 30-minute semi-structured interviews, in an attempt to learn the details about how each instructor was using ePortfolios in their curriculum and program structure.

1. At a program or department level, how are ePortfolios used or integrated into the curriculum (e.g., gateway and capstone courses, required number of assignments, etc.)?
2. At a course level, how are ePortfolios integrated into the curriculum? Do you know of any specific reflective prompts, assignments, or activities that are particularly effective? Do you have any exercises or activities related to reflective writing? Would you be willing to share these with Metro Academy faculty?
3. Are ePortfolio assignments integrated across courses within your department or program? If so, how is this done?
4. If you were leading a faculty development effort (to integrate ePortfolios into the curriculum), what would you do? What challenges might you expect and how would you recommend overcoming them?
5. How are ePortfolios evaluated in your department (or course) (e.g., peer review, faculty formative/summative review, rubrics, etc.)?
6. Are there additional ways you would like to use ePortfolios in the future?
7. Any other comments or advice for programs trying to deeply integrate ePortfolios into their curriculum?
8. Why did you decide to begin using ePortfolios?
9. Do you find that using ePortfolios in your curriculum is more time consuming than not? If so, what specifically takes time?
10. What is the overall objective of your ePortfolios?
11. Do you think that students are using their ePortfolios after graduation or for other reasons?

In addition, if Shada had any information (provided by Academic Technology) about specific work that instructor was doing, she asked them about that work. The findings are included below.

Appendix A
Summary of Best Practices: Findings from Faculty Interviews

Best Practice	Description
Discussion of online security	One ePortfolio assignment includes a discussion of online security/safety for building an ePortfolio. Topics include what information is appropriate and safe to post on an ePortfolio and how to write your email address to avoid receiving spam mail.
Discussion of equity	One ePortfolio assignment has students look at the equity of various ePortfolio platforms. Through a social justice lens, students discuss accessibility in terms of financial barriers and universal accessibility design.
Reflection	One instructor has students write in-depth reflections for four areas of learning. The reflections are generally three to five pages in length and accompany three to five academic artifacts. This program scaffolds reflection over semesters and the instructor has found that more open prompts tend to be more valuable when asking students how they think their learning will transfer. Some of his guiding questions include, "What are the core understandings of each domain? What understandings are shared throughout all of their courses? Then, what are the disagreements? What are the strands of knowledge that differ in the different classes that they've taken?" He then asks them to "place themselves in that conversation" and then "situate themselves in those disagreements" and to think about how this will influence their future work. These reflections then help the instructors of the program determine how well the program's curriculum is meeting the intended learning objectives. One drawback, the instructor noted, was that there are many courses that their students take that the program does not have influence over.
Continuous goal setting and planning	One program facilitates 'Portfolio Workshops' throughout the program, to give students an opportunity to rethink their goals and how they are going to reach them. These workshops are not held in a computer lab and do not cover the technical aspects of the ePortfolio. Instead, these workshops help students think about what they want the content of their ePortfolio to look like and how to make decisions throughout their program that help lead them to their professional and academic goals. These workshops are held by two faculty members and they try to hold them about once a semester. They begin with asking students what their goals are and then writing everyone's goals up on the board. They then discuss what things the students can do to achieve those goals (e.g., what classes to take) and what have the students already done (e.g., what classes have they taken, what activities have they done). The students then outline what things they would like to be able to do and what they would like to improve upon. The students walk away from the workshop with a list of a couple concrete things they plan to do the following semester. They are encouraged to come to a later workshop to refocus, particularly if their goals have changed. Student feedback of the workshops has been extremely positive. Students say that "the workshops have helped them put things in perspective and know why they're taking certain classes and not just doing assignments for the sake of doing assignments" (quoted from an instructor).

Best Practice	Description
Peer review	Two programs demonstrated ways to incorporate peer feedback. One required that students present on their ePortfolio toward the end of the semester and receive informal but guided peer feedback from the class on how to improve their ePortfolio before the end of the semester. The presenter is then also able to provide information and advice (to the students who are not as far along in the process) regarding how much time each section took, what was particularly difficult, etc. Another program assigns small groups of students to a faculty advisor, who then facilitate a peer review process before students submit a draft to their advisor. Peers generally work in teams of two or three.
Survey of best practices within a program	In one instance, an instructor had been advocating for the program to transition to ePortfolios from a traditional paper-based portfolio and although fellow faculty members seemed interested in the idea, the idea was not moving forward. He decided to survey the faculty to learn what assignments were going to the portfolios, what kinds of reflections were being used, and how they hoped the program could do better. Presenting this information was what ultimately got the faculty excited and enthused to move forward. The instructor stated, "that was when I felt we had buy in, was when I wasn't the one pushing it. When the idea I wanted was coming organically from the faculty. But that required not just providing resources to the faculty, but getting them to reflect and letting them see what their peers were doing and suggesting. At least in our small program, that was a very powerful thing."
Feedback from external audiences	One program that focuses on trying to make the ePortfolio become a tool to help their students move on to the professional world, met with two employers in the field to receive feedback on the content of their students' ePortfolios.
Process for tying artifacts to competencies	One program that uses a competency-based ePortfolio provides students with lists of the possible artifacts that might fit with each competency. Depending on the particular competency, the artifacts may be predetermined, or the student may have the autonomy to decide what piece of academic work fits best there. Some competencies may have one predetermined artifact and one artifact that is open to the student's choosing.
Documented resources	One program–with the help of Academic Technology—developed an in-depth handbook that serves as a guide for both faculty and students on how to use ePortfolios. The handbook includes information such as the ePortfolio content requirements, information on the process, assignment checklists, a guide to using the software, evaluation and grading guides, and a sample peer evaluation form.
Facilitating initial faculty meetings	One program started their ePortfolios by having a faculty retreat and collectively discussing things such as what to name each section of the ePortfolio template, what assignments to include, how much of the students' grade should be attributed to the ePortfolio and what the core assignments related to the ePortfolio should be (a culminating assignment, a presentation, etc.).
Creating consistency	Several instructors noted the importance of creating consistency among the faculty, particularly in terms of overall goals and objectives. One program had the faculty collectively design a rubric to use, and although it can be slightly adapted, it has been helpful for students to have that consistency throughout the program. Another instructor also noted that if faculty members are not all on the same page with objectives, the group can run into a lot of problems down the road.

The Bottomless File Box:
Electronic Portfolios for Learning and Evaluation Purposes

Shannon Jarrott and Laura Eubanks Gambrel
Virginia Tech

Portfolios have been used for the past three decades in higher education for assessment of student competency and also as a reflection tool to assist student learning. Electronic portfolios, or ePortfolios, have additional benefits compared to paper portfolios in that they are easily accessible, portable, and sharable, and they are more environmentally friendly. Although ePortfolios are gaining in popularity, faculty and students sometimes resist adopting new technology. We describe the development, implementation, and evaluation of two ePortfolios, for undergraduate and graduate programs, in a Human Development department. The systems were created in response to a university initiative for integrated assessment of student competencies, the findings of which are reported through a centralized, electronic system. For undergraduates, the ePortfolio was used primarily as an evaluation and reflection tool, whereas graduate students created personal ePortfolio pages to demonstrate learning and professional development. As a result of our experience, we recommend that departments seeking to implement ePorfolios as part of an integrated assessment system start simple, collaborate with technology experts, build upon work completed in other programs, and educate students and faculty about the personal and professional benefits of ePortfolios.

University instructors and administrators are challenged to provide evidence of student learning. Grades and test scores provide insufficient evidence (Chambers & Wickersham, 2007); therefore, administrators and faculty seek indicators of the process and outcomes of instruction, such as the degree to which specific learning goals are demonstrated in student work. Consequently, assessments of student learning should demonstrate the degree to which student outcomes reflect program goals (Cambridge, 2008). Some universities and individual departments have moved towards integrated assessment to gather evidence of student competence on a routine basis as opposed to great flurries of activity commonly associated with periodic program evaluations (Chambers & Wickersham, 2007). While integrated assessment makes routine the process of gathering and evaluating indicators of student learning, there are difficulties associated with completing integrated assessments (Swigonski, Ward, Mama, Rodgers, & Belicose, 2006). Electronic portfolios represent one means to simplify the process of integrated assessment of student learning.

Electronic portfolios, or ePortfolios, are "personalized, web-based collections of work, responses to work, and reflections that are used to demonstrate key skills and accomplishments for a variety of contexts and time periods" (Lorenzo & Ittelson, 2005, p. 3). Electronic portfolios should support evaluation efforts and student learning the same as a more traditional portfolio process with a few advantages over the traditional portfolio. ePortfolios enable streamlined management of materials and ease of distribution for evaluation and providing feedback (Cooper & Love, 2002; Gathercoal, Bryde, Mahler,

Love, & McKean, 2002, p. 29). Millennial students find the technical aspects (e.g., portability) and appearance of the ePortfolio appealing (Ciocco & Holtzman, 2008). Finally, these portfolios boast the ecological benefit of saving space, paper, ink, and other materials associated with the traditional portfolio. Considering these benefits of ePortfolios, we sought to develop an ePortfolio system that could be incorporated into an integrated assessment system that evaluates student learning and professional competencies. In the current paper we discuss how we developed and implemented an ePortfolio system in order to use available technology to respond to the university demand for integrated assessment documenting student learning and competencies.

Portfolios have been used across multiple disciplines for decades to achieve three primary objectives: to support student development and learning, to support assessment of student learning, and for marketing (Wolf, 1999). Chambers and Wickersham (2007) stated that there has been a conflict between two of these objectives, which they name as "assessment *of* learning" and "assessment *for* learning" (p. 352). They argued that portfolio objectives needed to be integrated into instruction and evaluation efforts to maximize benefits for students, teachers, and administrators. This means that the best portfolios are used both for assessment purposes and to support student learning.

Developmentally, portfolios support student learning; the students identify their learning goals, reflect on the processes they employed, and assess their success in achieving the specified goals. The reflection process is learner-centered (Hewett, 2004) and should engage students in critical thinking (Donovan & Iovino, 1997) as they assume increasing responsibility for aligning their learning process with identified goals.

Education programs employ portfolios widely to document students' achievement of accrediting standards for teachers (e.g., Strudler & Wetzel, 2008; Swan, 2009). Other academic programs whose curricula are informed by accrediting bodies use student portfolios for evaluation and reaccreditation purposes (e.g., in nutrition and food sciences, see Clark et al., 2009; for engineering, see Knott et al., 2004). Portfolios provide an effective vehicle for organizing and presenting materials for evaluation and tracking students' academic progress (Swigonski et al., 2006).

Portfolios have historically been used by fine arts students and professors to present their creative work as part of the application process for competitions and employment. Artists and performers led the way with multi-media portfolios (Meeus, Questier, & Erks, 2006), which allowed them to share their visual and auditory talents in a compact format. Using portfolios to share work thus meets the third goal of portfolios, marketing.

Literature Review

Limited research on ePortfolios' utility and impact on student learning is mixed. Gathercoal and colleagues (2002) found that program faculty were the lynchpin to the success of ePortfolios; without their active support, students' full participation could not be expected. Chambers and Wickersham (2007) described several surprising results in their survey of students and instructors in a master's of education program. Students reported challenges using basic computer skills required for the ePortfolio; not surprisingly then, students reported gains in technical skills and confidence using ePortfolio technology. Despite building technical skills and self-knowledge, students were not confident that the ePortfolio facilitated their content learning. The authors concluded that the students, who were the first cohort in the program to utilize the ePortfolio, viewed the process as external to their learning and program requirements. However, they perceived that having an ePortfolio would be helpful for professional development. The authors concluded that targeted efforts by instructors with subsequent cohorts should address this perception by emphasizing the connections between the ePortfolio and student learning.

Benefits of enhanced technical skills and employability stemming from management of ePortfolios are a theme in research of students' experiences. Sherry and Bartlett (2004-2005) found that students had an overall positive view of ePortfolios. Undergraduate (n=23) and graduate (n=14) education students reported that ePortfolios improved their technology skills, would help them get jobs in the future, were good for showcasing skills and learning, promoted self-evaluation, and were more powerful and convenient than traditional portfolios. These results were true of students with different levels of technology skills and training. As Chambers and Wickersham (2007) found, this group of students also possessed a limited view of how ePortfolios could be implemented within broader organizational structures, such as use by students in their future classrooms or by school teachers and administrators to assess students, programs, or instructors (Sherry & Bartlett, 2004-2005).

ePortfolios are a way for graduate students to develop their professional and self identities (Blair & Monske, 2009). For example, with a qualitative study of 22 ePortfolios created by graduate students, Brandes and Boskic (2008) found that two of the themes that emerged were that of ePortfolio creation as a journey and as a transformation. Both of these themes emphasized how the process of developing an ePortfolio included personal exploration and reflection in a new on-line format, which guided their learning about themselves, technology, and their field. Tsai, Lowell, Liu, MacDonald, and Lohr (2004) in a qualitative study of five doctoral students discovered similar themes. They found that the iterative process of developing ePortfolios, including reselecting artifacts and redesigning elements, helped to promote students' learning of course material and self-discovery. However, student reports varied on how positively they viewed this process; self-reflection confirmed one student's confidence, and left another feeling depressed. This suggests that portfolio development can increase introspection, and thus should be guided closely to help students to feel competent and pleased with their finished products, instead of defeated or frustrated (Ciocco & Holtzman, 2008).

The current paper describes the development of an ePortfolio for the department of Human Development at Virginia Tech. We describe the circumstances by which we were motivated to develop an integrated system for evaluating student learning outcomes using the ePortfolio. We discuss the collaborative effort to identify appropriate learning outcomes, design the ePortfolio, create tools for students to post ePortfolio items, and assess student learning. The undergraduate ePortfolio was developed first, followed by an ePortfolio for doctoral students that included an optional personal ePortfolio and standardized department ePortfolio required of all students. Challenges in building faculty and student buy-in and implementing ePortfolio technology are addressed, and we conclude with recommendations for other programs and next steps in the department's continued development and utilization of the ePortfolio system.

ePortfolio Development

Motivation

Academic departments at Virginia Tech conduct 5-year program reviews, which include close scrutiny of undergraduate and graduate student learning. Faculty involved with the evaluation process have experienced frustration gathering evidence of student learning from various course assignments. Evaluators typically find themselves coordinating the collection of paper copies of written assignments from several instructors across multiple semesters, which involves randomly sampling assignments from a class, removing identifying information, making paper copies, and returning them quickly to the instructor for grading. Evaluators of these artifacts are then responsible for interpreting instructors' directions for the assignments as they assess students' success demonstrating the targeted outcome. Our department completed its last 5-year review in spring 2006 having identified some strengths and growth areas in the department and feeling anew the challenges of coordinating materials for the evaluation. The department also launched a revised undergraduate curriculum in fall 2006, which meant that a number of new and revised courses were implemented with useful information gleaned from the 5-year evaluation data.

In 2006, the university adopted an integrated assessment system (to compliment the 5-year review) that involved annual evaluation of some element of each academic undergraduate and graduate program and reporting of evaluation goals and outcomes through a central reporting system. The prospect of repeating the 5-year frenzy on an annual basis motivated us to find a system with which we could efficiently gather and assess meaningful information on student outcomes with minimal disruption to instructors and students. That same year, the university revised its guidelines for undergraduate student demonstration of visual, written, and spoken communication skills. Every undergraduate program aligned courses and assignments from the freshmen to senior level with these different means of communicating.

Additional motivation for a graduate ePortfolio stemmed from the Graduate School requirement that each department provide annual evaluative data on graduate students' progress towards degree (some of which is distinct from the indicators of student learning expected for the university's annual assessment and 5-year academic program review). We sought a system for meeting graduate school expectations that would also support faculty efforts to address concerns and champion the successes of our students. The first Human Development Graduate Student Annual Review (GSAR) was held in 2007 using a standard paper portfolio format.

With the convergence of these five events (5-year review, initiation of a new undergraduate curriculum, introduction of integrated annual assessment, revised communication skill standards, and Graduate School reporting requirements), all indicators pointed to change in the department's undergraduate and graduate evaluation system. By identifying gaps in our curriculum and identifying where (in which classes) and how (with which assignments) these learning competencies were addressed, we were able to focus our efforts on enhancing competencies and assessing resultant student learning. We possessed all the impetus necessary to create a more efficient system for gathering indicators of undergraduate student learning. Undergraduate and graduate ePortfolios would provide our department with an easily accessible, integrated evaluation system that could be utilized for multiple and varied university assessment requirements while also facilitating student self-assessment and professional development.

Consultation

We piloted a departmental ePortfolio to address dual objectives of enhancing student learning and integrating assessment of student competencies and progress towards degree with a technologically advanced, portable tool that is more environmentally friendly than traditional paper portfolios. The department's ePortfolio system is powered by Sakai's Scholar program (http://sakaiproject.org), a new open-source software program for course management and interactive web-based communication. The university also uses it exclusively for online course management. The benefit of using Sakai for our ePortfolios is that it is customizable for the needs of our department (i.e. our student portfolios do not need to follow the same template as students in English or engineering). As other departments began to use Sakai to develop ePortfolios for their students, we were able to base our ePortfolio on their models and make changes to fit our needs. We relied heavily on the expertise of others to develop our own ePortfolio model.

Undergraduate ePortfolio. We developed our undergraduate ePortfolio through interdisciplinary collaboration with staff from the offices of academic assessment, undergraduate teaching, and learning technologies. Faculty were surveyed to identify assignments completed in Human Development courses that aligned with (a) core disciplinary competencies (i.e., program development and evaluation skills) and (b) university competencies for written, spoken, and visual communication (see http://www.cle.prov.vt.edu/views/index.html). Our original ePortfolio template was intricate (see Figure 1), requiring seven artifacts from a senior capstone course intended to reflect five

Figure 1
Proposed Matrix for HD Senior Captstone ePortfolio 2006-2007

Competency	Assignment						
	Program Analysis	Leadership Case Study	Leadership Exercises	Evaluation Design	Presentation	Other coursework	Other coursework
Knowledge of principles of lifespan development and family relationships							
Knowledge of human services systems and organizations and understanding of their functions and operations	*						
Understanding of systems of oppression and opportunity							
Critical thinking and analysis skills		*					
Sensitivity to and ability to reflect deeply on intersections of public and private experience			*				
Helping skills for professionals in human services and related fields							
Program development and evaluation skills				*			
Speaking, writing, and visual communication skills, including computer literacy					*		
Applied research skills and ability to evaluate print, video, and Internet resources							

Figure 1. Grey items with asterisks (*) reflect alignment of student competencies with assignments collected for the HD senior capstone course.

competencies central to the Human Development degree and two categories of communication competencies. Besides being complex and placing the onus for gathering ePortfolio materials on one course instructor, the initial matrix contradicted pedagogy about using ePortfolios to document an individual's development. Gathering virtually all of the material in a student's capstone course could only indicate competencies near the time of graduation without indicating development across the student's years in the program.

Working with support from the university office devoted to undergraduate teaching (www.cider.vt.edu), we analyzed the department's last 5-year review, our revised curriculum [developed to meet the National Council on Family Relations Certified Family Life Educator (CFLE) requirements], and the department's alignment of courses with university communication requirements. In so doing, we identified two key learning areas to target with the ePortfolio. These core Human Development and communication competencies, *professional writing* and *program evaluation*, were identified as weaknesses in our last 5-year review and are at the heart of many human service professionals' roles. Using faculty survey responses, we identified course assignments, or *artifacts*, that targeted this content competency (program evaluation) and communication competency (professional writing). The resultant undergraduate ePortfolio consisted of three

Table 1
Current HD Undergraduate ePortfolio Aligning Courses with Content and Communication Competencies and
Artifact Assessed for Competency Demonstratio

	HD 2335: Principles of Human Services	HD 3014: HD Research Methods	HD 4714: HD Capstone
Professional Writing Program Development and Evaluation	Case study	Needs assessment	Grant proposal

Figure 2
Current Graduate Student Department ePortfolio

assignments (see Table 1), one each from three classes taken by majors at the sophomore, junior, and senior levels that exercised these competencies, thereby giving us access to evidence of students' development of these core competencies as they progress towards their degree.

The current ePortfolio captures students' artifacts and their reflections on the assignments, a self-evaluation of their success demonstrating learning objectives. The learning technologies experts (www.lt.vt.edu) taught us the technological skills necessary to implement this department-wide system, collecting artifacts from the three identified classes every semester. Hence, through conversations and collaborations with experts on instruction, evaluation (www.aap.vt.edu) and Sakai, we developed an undergraduate ePortfolio that was manageable and met our immediate needs for integrated assessment.

Graduate ePortfolio. We developed the graduate ePortfolio to document progress towards degree with an emphasis on professional competencies. In order to support student learning, assessment, and marketing, we created two templates for the graduate student

ePortfolio. First, to meet Graduate School requirements, we used a standard department ePortfolio template to support the GSAR process, which is intended to reflect the student's progress in the program during the annual reporting period. Initially, students submitted materials for the GSAR in paper form, including their (1) transcript, (2) CV, (3) student evaluation completed by the student and his or her advisor, (4) assistantship evaluations, (5) a checklist indicating steps in the degree progress that the student has completed (with associated dates), and (6) copies of professional presentations and published papers. Items submitted to the department ePortfolio for the GSAR process were identical, so the move to electronic submission represented only a procedural change.

We created the second graduate student ePortfolio template, a professional ePortfolio page, when we received feedback from current graduate students that a professional ePortfolio (similar to a personal website) would be a valuable tool for students searching for internships and employment. Students with a personalized ePortfolio are able to market themselves and their skills in more easily accessible, and often

faster and richer, ways than students with traditional portfolios or no portfolio at all. This ePortfolio includes an opening page with the student's photo and various tabs that include artifacts documenting a student's research, service, and teaching experience; it provides links to publications, presentations, and the student's CV (see Figure 2; Students can post items once to the site and designate which appear in their professional ePortfolio or departmental page.). After creating the professional ePortfolio page, the creator can keep the site private, share it with specific individuals (e.g. a professor or potential employer), or publish the site publically on the Internet. Because it is increasingly common for potential employers and clients to complete Internet searches on applicants, a professional ePortfolio page was intended to allow students to showcase their skills in a professional manner. Thus, through a search, or a web address given on a business card or CV, those interested can easily access carefully selected information and artifacts about the student.

Implementation

To implement the undergraduate and graduate ePortfolios, the second author, a graduate student assistant, was trained in Sakai and the ePortfolio technology; she then developed training workshops, including Camtasia videos, to support faculty and students as students developed their ePortfolios. Undergraduate students received a brief orientation in each class that required an artifact for the ePortfolio. The graduate assistant addressed the dual benefits of the ePortfolio system (supporting the student learning process by engaging the students in reflection and documenting student learning by archiving student artifacts), but most of the workshop time was devoted to using the Sakai program, which was new to faculty and students alike. As the year progressed and more students became familiar with using Sakai as a course tool (many faculty used Sakai's Scholar courseware in their courses), the ePortfolio process was mastered more quickly, taking less than ten minutes to explain.

The same graduate assistant introduced the dual page graduate ePortfolio in a professional development seminar attended by all department graduate students. The required department ePortfolio page used for the GSAR utilized a matrix structure similar to the undergraduate ePortfolio page and was easily adopted by the students. The personal page was more complex because of the flexibility students had to customize their page; thus, it proved more technically challenging for students to adopt. To support graduate student development of their personal ePortfolio pages, the graduate assistant provided an initial workshop and created additional Camtasia videos. Students could then access these videos when needed as they developed their ePortfolio. Students who used these videos found

them helpful and easy to follow, though the second author experienced many students' preference for individual consultation over Camtasia videos.

Evaluation of Student Artifacts

As the ePortfolio templates developed, the first author worked with the department's Directors of Undergraduate and Graduate Studies on evaluation procedures. The process implemented to evaluate student work has, thus far, evolved distinctly for graduate and undergraduate artifacts.

In consultation with staff at the university office dedicated to undergraduate education, the first author and Director of Undergraduate Studies developed a simple rubric to evaluate undergraduate ePortfolio artifacts. Currently, the rubrics are specific to the artifact being evaluated.

Undergraduate students in our department currently number more than 500, with 50-100 students submitting artifacts for each of the three ePortfolio courses every semester. Given the large number of artifacts submitted each semester, the Director of Undergraduate Studies and a second designated evaluator (a trained graduate student) randomly select 20% of the artifacts from one of the three courses (raters alternate between the three courses) as part of the integrated annual assessment process. After establishing inter-rater reliability using the evaluation rubric, each rater independently scores the students' artifacts using the evaluation rubric and indicating whether the competency was demonstrated. A weakness of our system is that the Director of Undergraduate Studies sometimes rates the work completed by students in one of her courses. The competencies evaluated vary somewhat from year to year, reflecting the integrated assessment process, which requires the Director of Undergraduate Studies to identify and evaluate the accomplishment of a different learning objective annually. Evaluation data are reported through a central university system (WEAVE; www.weaveonline.com); findings are also shared with department faculty and inform undergraduate initiatives, including assessment goals for subsequent years.

We are developing a Metarubric informed by the American Association of Colleges & Universities VALUE Metarubrics (http://www.aacu.org/value/participation.cfm) that can be used across all the artifacts. With a Metarubric, a student artifact demonstrating competence in a 2000-level (sophomore) course would earn a rating of a 2 on a 4-point scale, while a student artifact demonstrating competence in a 4000-level (senior) course would earn a rating of 4 on the same scale. Use of a Metarubric simplifies evaluation by standardizing the evaluation tool across

assignments targeting the same learning outcomes. It allows evaluators not only to assess student learning within a given set of artifacts but also to monitor intraindividual development. A student's individual scores should increase across the different artifacts, reflecting development across their coursework.

Considering the graduate ePortfolios, only the standardized department ePortfolio is evaluated by the department with the GSAR. The personal ePortfolio pages are created and maintained independently by the students. The standardized department ePortfolio is simply used as a means for students to post their GSAR materials and for the department to maintain copies of the ePortfolio artifacts. Students submit their ePortfolio items for their faculty advisor and the Director of Graduate Studies to review prior to the GSAR. At the GSAR meeting, advisors report on graduate student progress towards degree, including accomplishments and concerns. Faculty advisors are responsible for providing written feedback on the GSAR, which is signed by the student and filed with the student's records. The student and his or her graduate committee address concerns with student progress jointly. The Director of Graduate Studies utilizes ePortfolio data for two purposes. First, he or she assesses and reports on achievement of identified goals for the university's integrated assessment program using a centralized reporting system (WEAVE; www.weaveonline.com). WEAVE data are often the source of the next year's goals and related activities in the graduate program. Second, the Director of Graduate Studies prepares summary notes on the GSAR, which are submitted to the Graduate School annually on a CD containing each student's GSAR evaluation materials and the faculty advisor's written feedback.

Reflections and Next Steps

Evaluation of ePortfolio Utility

We launched our undergraduate ePortfolio in 2009 and the graduate ePortfolio in 2010. Evaluative feedback we received about the ePortfolio, including survey responses from doctoral students and solicited feedback from faculty, has been used to revise the process for training students and faculty to use the ePortfolio system. Here, we summarize the perspectives of different users of the system, describe our plans for refining our ePortfolios, and make recommendations for others considering ePortfolios.

Administrator's perspective. As the current department head and the person responsible for leading the department's last 5-year academic review, the first author values the opportunity that ePortfolios create to integrate assessment of student learning in a way that can be meaningful for instructors, streamline the efforts of evaluators, and reduce waste of materials and time. The ePortfolio system, as with any large-scale assessment effort, could not have been developed by one person. We were fortunate to have resources in offices across campus that supported our technical, assessment, and pedagogical needs. The resultant system is simpler, more focused, and reflects student development better than any product one faculty member could have created alone. The investment of department and university resources to hire a graduate student to collaborate with the department head, other faculty, students, and university consultants was worthwhile; the graduate assistant did not start the project with advanced computer skills, but her interest in the project and skill for collaboration and independent work were great assets to the project. Other graduate assistants have since moved handily into the role of tech support for the ePortfolio system.

The ePortfolio functions largely as a giant file box that we can go to at any point to evaluate evidence of student learning; some evaluations will be mandatory, while others may evolve with recognition of strengths or gaps in the curriculum. We also envision opportunities to utilize the ePortfolio to involve alumni and practitioners as evaluators, which will reduce demands placed on faculty while benefiting the department with a real-world perspective on how our curriculum supports student development of skills necessary to succeed in the workforce.

Trainer's perspective. The graduate student assistant (Laura) who developed the ePortfolio training materials and worked with students and faculty to use the undergraduate and graduate ePortfolios, found the Sakai software simple and quick to use. Laura already had a good working knowledge of the program, so applying her knowledge to evaluation took little new learning. She found it helpful that she did not need to go into an office and look through boxes and files to find a student paper, and instead could simply click on a document on her computer, read it, and send the feedback electronically to the main evaluator. This saved travel time, storage space, and headaches in actually finding student papers months after they had been submitted.

Students' perspective. Undergraduate students' comfort with the Sakai program grew each semester, and the second author found that training sessions proceeded more quickly and required fewer follow up questions of the graduate assistant. Based on feedback from the instructors of courses for which ePortfolio artifacts were submitted, we learned, similar to Chambers and Wickersham's (2007) findings, that students viewed the ePortfolio as a valuable means of storing their work but lacked a vision for how the ePortfolio could be useful to them in the future –

whether to demonstrate their skills to a potential employer or to utilize in the workplace.

Turning to the graduate ePortfolio, students had some technical difficulties submitting and securing their GSAR materials into the ePortfolio, but the Director of Graduate Studies and his graduate assistant easily addressed these. Considering the personal ePortfolio pages, while students could see the benefit of having a personal ePortfolio, they felt that the time needed to master the technology and develop a professional product was too great. In this regard, our findings reflect those of Ciocco and Holtzman (2008) who found that millennial students did not adopt ePortfolio technology intuitively. Only one student of 18 who received training did not complete the personal ePortfolio page; however, final products varied in detail and professional appearance.

Faculty members' perspective. Faculty involved with the undergraduate ePortfolios faced the greatest challenges as they worked with large numbers of students to learn the steps for posting artifacts. Two evaluators used the ePortfolio to access artifacts for evaluation. Because the technology was new to the faculty as well as the students, some concerns were voiced about the time needed to navigate the system. At the same time, evaluators were able to access the artifacts for evaluation through the centralized system, without having to collect and make copies of student work.

Next Steps

We have generated a list of next steps to take in our own department of Human Development. These steps may also guide other programs developing ePortfolio systems to support student learning and integrated assessment.

As other ePortfolio scholars determined (Gathercoal et al., 2002), we found that faculty support for the integrated assessment system was critical to its success. We began strategically with the faculty responsible for annual evaluation efforts; with the undergraduate ePortfolio, it was also helpful to start with faculty who are dedicated to the undergraduate curriculum or are early adopters of new classroom technology.

Department utilization of the data further cements faculty endorsement of the ePortfolio system, as they can see evaluation results used to inform department goals and curricular development. Next steps to further faculty buy-in include expansion of faculty involvement with ePortfolios so responsibility is not limited to only a few faculty members.

We continue to work on streamlining the process by which ePortfolio artifacts are evaluated. For the undergraduate system, this could involve identifying and training alumni and other professional reviewers. Outside reviewers would provide a critical perspective of professionals in the field who are qualified to assess the degree to which our curriculum prepares professionals entering the field. Second, engaging outside reviewers can reduce the demand on department faculty to evaluate ePortfolio artifacts. Streamlined evaluation training and forms, including a Metarubric that can be used across all course artifacts, would also need to be easily accessible to outside reviewers.

Considering the graduate ePortfolio system, streamlining seems to be needed to simplify the process by which students create their personalized pages. A standardized template might afford fewer degrees of freedom for students but may increase the likelihood that the student can create their own ePortfolio page with limited time and assistance.

One drawback of our current submission system (powered by Sakai through Scholar) is that it often requires duplication of effort by students and instructors. For example, students currently submit a paper or electronic copy of an assignment to an instructor and then have to submit the same document at the department ePortfolio site. Similarly, instructors grade assignments in a course site grade book but must go to the department ePortfolio page to offer feedback on the student's ePortfolio reflection.

At the same time that we seek to streamline the effort of posting and evaluating ePortfolio items, we must expand the range of artifacts posted to the ePortfolios. This effort will distribute the workload across more faculty teaching courses associated with ePortfolio artifacts. The current ePortfolio artifacts were selected to assess student competence in perceived curricular gaps; we should now be able to determine that the gap has closed and address another area that merits attention.

We are also challenged to use available technology to document student communication competencies beyond the written word. Our university has expectations for students to demonstrate written, visual, and oral communication skills. Students can easily post visual artifacts (e.g., PDFs of brochures or instructional materials prepared by students) and video or audio recordings of oral presentations to their ePortfolios; this will be an important next step for us to take in developing our ePortfolios.

We are challenged to use the ePortfolios to support student development. Rather than simply requiring students to place items in their ePortfolios, instructors and advisors can use the ePortfolio intentionally to engage students in reflection on their learning and development. Reflection and feedback tools for students and instructors can foster more effective use of the ePortfolios.

We need to gather data on multiple cohorts to determine whether and how students use the ePortfolios to

determine how the ePortfolio can support students academically and professionally. Though portfolio use is not standard in our field, we need to remain attuned to the potential utility of professional ePortfolios for students and respond accordingly. For example, we have seen a recent and significant increase in the number of undergraduate majors planning to pursue licensure or degrees in the field of education, where ePortfolios are commonly used. Thus, it may be valuable for undergraduate students to learn how to create a personal ePortfolio prior to beginning their post-graduate work in education.

Our advice to departments considering development of an ePortfolio system for their graduate or undergraduate programs is to take the plunge into ePortfolios – albeit cautiously. Here are some important points:

- Gather data from potential end-users, students, and instructors regarding what they would like to be able to post, share, and access (for instructors/administrators).
- Make sure to educate end-users about the purpose and potential value of an ePortfolio, so that it does not appear to be a meaningless requirement. For graduate students, examples of professional opportunities gained as a result of an ePortoflio are especially convincing.
- Consult with campus support offices to learn how the university's courseware program can support a flexible ePortfolio.
- Invest some resources to develop and pilot the system, whether this entails a course release for a faculty member or hiring a graduate student assistant or consultant who is comfortable learning to use new technology and can teach others how to use it.
- Start simple in response to department need and university initiatives.
- Learn from those who have gone before (our university's engineering and education programs developed their ePortfolio systems in response to accreditation demands several years before we launched our system).
- Create a standardized ePortfolio that can be applied to all students and that can be expanded as users become more comfortable with the technology. Additions and modifications should reflect evolving needs of the department, determined at least in part by assessing the ePortfolio artifacts. While a personalized page created by students might look great, wait until students and instructors become familiar with the process before launching an option that requires greater technical and design skill.

- Work with faculty who are techno-friendly innovators; as these faculty report on ease of use, others will get on board.

Taking these steps helped us implement a manageable system, a virtually bottomless file box, which can be used with relative ease by faculty and students alike.

Conclusion

Our experience implementing the ePortfolio was quite positive. The bumps we encountered may be attributed to the newness of the Sakai software to university students and faculty. We expect that, as they become more familiar with the Sakai platform, students and faculty will soon require no assistance accessing and developing the standardized graduate and undergraduate department ePortfolios. The ePortfolio in its current format will be amended and updated as the needs of any department are not stagnant; this is a benefit of ePortfolios using the Sakai system, because the ePortfolios can change as needed. The ePortfolio demanded an iterative process managed over multiple semesters to craft a tool that collects critical information reflecting the heart of our undergraduate and graduate Human Development programs. Its success, and ongoing challenges, inspires us to continue fine-tuning our ePortfolio system to enhance student learning and our capacity to foster that learning.

References

Blair, K. L., & Monske, E. A. (2009). Developing digital literacies and professional identities: The benefits of ePortfolios in graduate education. *Journal of Literacy & Technology*, *10*(1), 40-68.

Brandes, G. M., & Boskic, N. (2008). Eportfolios: From description to analysis. *International Review of Research in Open and Distance Learning*, *9*(2), 1-17.

Cambridge, D. (2008). Universities as responsive learning organizations through competency-based assessment with electronic portfolios. *JGE: The Journal of General Education*, *57*(1), 51-64.

Chambers, S., & Wickersham, L. (2007). The electronic portfolio journey: A year later. *Education*, *127*(3), 351-360.

Ciocco, M., & Holtzman, D. (2008). E-Portfolios and the millennial students. *Journal of Continuing Higher Education*, *56*(3), 69-71.

Clark, S. B., Holmes, A; Hendricks, M., Willis, G., Griffin, E., Eskew, A.,…Zaldivar, M. (2009). *Student teams collaborate to design an assessment based electronic portfolio*. Poster presented at the Conference on Higher Education Pedagogy at Virginia Tech, Blacksburg, VA.

Cooper, T., & Love, T. (2002). Online portfolios: Issues of assessment & pedagogy. In P. Jeffery (Ed.), *Crossing borders: New frontiers of educational research*. Victoria, West Australia: AARE Inc. Coldstream. Retrieved from http://www.aare.edu.au/01pap/coo01346.htm

Donovan, B., & Iovino, R. M. (1997). *A "multiple intelligences" approach to expanding and celebrating teacher portfolios and student portfolios*. Paper presented at the Annual Meeting of the Northeastern Educational Research Association.

Gathercoal, P., Bryde, B., Mahler, J., Love, D., & McKean, G. (2002). *Preservice teacher standards and the Magnetic Connections electronic portfolio.* Paper presented at the American Educational Research Association (AERA), New Orleans, LA.

Hewett, S. (2004). Electronic portfolios: Improving instructional practices. *TechTrends*, *48*(5), 26-30.

Knott, T. W., Lohani, V. K., Griffin, O. H., Loganathan, G. V., Adel, G. T., & Wildman, T. M. (2004). Bridges for engineering education: Exploring ePortfolios in engineering education at Virginia Tech**.** Paper presented at the American Society for Engineering Education Annual Conference & Exposition. Salt Lake City, UT.

Lorenzo, G. & Ittelson, J. (2005). An overview of e-portfolios. *Educause Learning Initiative, ELI Paper, 1-28*. Retrieved from http://net.educause.edu/ir/library/pdf/ELI30 01.pdf

Meeus, W., Questier, F., & Derks, T. (2006). Open source ePortfolio: Development and implementation of an institution-wide electronic portfolio platform for students. *Educational Media International*, *43*(2), 133-145. doi:10.1080/09523980600641148

Sherry, A. C., & Bartlett, A. (2004-2005). Worth of electronic portfolios to education majors: A "two by four" perspective. *Journal of Educational Technology Systems, 33*(4), 399-419.

Strudler, N., & Wetzel, K. (2008). Costs and benefits of electronic portfolios in teacher education: Faculty perspectives. *Journal of Computing in Teacher Education*, *24*(4), 135-142.

Swan, G. (2009). Information systems in teacher preparation programs: What can we learn from a 5-year longitudinal case study of an electronic portfolio database? *Journal of Educational Computing Research*, *41*(4), 431-451. doi:10.2190/EC.41.4.c

Swigonski, M., Ward, K., Mama, R., Rodgers, J., & Belicose, R. (2006). An agenda for the future: Student portfolios in social work education. *Social Work Education*, *25*(8), 812-823. doi:10.1080/02615470600915860

Tsai, H., Lowell, K., Liu, P., MacDonald, L., & Lohr, L. (2004). Part two: Graduate student perspectives on the development of electronic portfolios. *TechTrends*, *48*(3), 56-60.

Wolf, K. (1999). *Leading the professional portfolio process for change*. Arlington Heights, IL: Skylight Professional Development.

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Perceptions Regarding the Efficacy and Use
of Professional Portfolios in the Employment of Teachers

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This study explored the perceptions of school administrators and teacher educators regarding the effective use of portfolios in the process of hiring new teachers. Three questions helped to focus this study: (1) What are the perceptions of school administrators and teacher educators regarding the value and use of portfolios in the employment of teachers? (2) What are the perceptions of school administrators and teacher educators regarding the quality and accuracy of teaching portfolios in documenting applicants' teaching skills? (3) What are the perceptions of school administrators and teacher educators regarding the problems and barriers in the use of teaching portfolios in the hiring process? Advantages and disadvantages regarding portfolios as an effective tool in the hiring process were identified along with several barriers to their more extensive use. Both teacher educators and school administrators reported that a high percentage of new teacher candidates are still using more traditional paper-based portfolios rather than ePortfolios. From the study emerged a clearer picture of how professional ePortfolios might be more effectively developed and used in the teacher interview and employment process to overcome some of the barriers identified by participants to the effective use of portfolios.

Over the last several decades, institutions of higher education have increasingly seen the value of portfolios as part of their academic programs. Portfolios are viewed as a way of determining not just how much students know, but also how they are able to apply and use what they know. A number of writers have attempted to define and describe the professional portfolio (Amirian & Flanagan, 2006; Goldsmith, 2007; Lorenzo & Ittelson, 2005). Yao, Thomas, Nickens, Downing, Burkett, and Lamson (2008) described a portfolio as "a systematic and purposeful collection of work samples that document student achievement or progress over a period of time" (p. 10).

The use of portfolios cuts across a wide range of disciplines and professional fields, including writing, communication, business, medicine, technology, and teacher education. (Mittendorff, Jochems, Meijers, & Brok, 2008; Newman, Cohen, Asaro, & Spalding, 2004; Nikirk, 2008; Oradini & Saunders, 2007; Ross, Maclachlan, & Cleland, 2009). It is especially in the areas of employment and career advancement that portfolios have increasingly been promoted as an essential element for success. Soon-to-be new college graduates are encouraged, prompted, and instructed in the proper development and presentation of their professional portfolio as documentation of their professional skills and accomplishments.

Various studies have focused on the value of portfolios in career development and advancement (Tubaishat, Azzedine, & Al-Rawi, 2009; Willis & Wilkie, 2009; Woodbury, Addams, & William, 2009). For instance, Borgen, Amundson, and Reuter (2004) conducted a study of public service employees in Canada involved in career portfolio development workshops. Results indicated that participants in the study increased their engagement in the exploration of an expanded range of career options.

The Increasing Use of Electronic Portfolios

As the growing sophistication of technology makes digital portfolios more prevalent, the professional literature has turned its attention to an examination of the ePortfolio (Bowers, 2005; Buckridge, 2008; Lin, 2008; Moss, 2008; Ntuli, Keengwee, & Kyei-Blankson, 2009). An electronic portfolio has been described by Abrami and Barrett as "a digital container capable of storing visual and auditory content including text, images, video and sound" (p. 2). A variety of advantages to the digital portfolio have been described in the literature. Willis and Wilkie (2009) noted that, "Although similar to hard-copy portfolios, digital portfolios offer enhanced benefits to this digital generation of students by giving them creative options for transferring experiences into interactive, meaningful displays of performance" (p. 74).

Garis (2007), observing the growth of technology is so many areas of higher education, concluded that the use of the traditional paper-based employment materials is quickly becoming out of date. He stated, "Emerging electronic portfolios hold great promise to change the national and international landscape in offering new Internet-based tools to support college student career development. Specifically, career-related e-portfolios enable students to understand, develop, chronicle, and communicate their career attributes to others" (pp. 3-4).

Goldsmith (2007) discussed a number of advantages of a digital-based portfolio as compared to the paper-based portfolio. The electronic portfolio reduces the need for multiple loose-leaf binders and file

folders and a more efficient and effective means for keeping track of items over an extended period of time. The electronic portfolio is much more flexible, allowing for convenient viewing over place and time and it allows the portfolio to be more genuine. Perhaps the greatest value of the electronic portfolio noted by Goldsmith is that it has greatly expanded, and continues to expand, the idea of what a portfolio is and can be.

The Use of Electronic Portfolios in Teacher Education

In many ways teacher education has been a leader in the promotion and use of the earlier paper-based portfolios and the more recent ePortfolios (Boody, 2009; Boody & Montecinos, 1997; Fox, White, & Kidd, 2011; Martin-Kniep, 1999; Moss, 2008; Salzman, Denner, & Harris, 2002; Stemmer, Brown, & Smith, 1992; Strudler & Wetzel, 2008, 2005; Zubizaretta, 1994). Teacher education programs and their students utilize portfolios for a number of purposes and the format and structure of those portfolios has steadily evolved along with the growth of technology (Bartlett, 2002; Gathercoal, Love, Bryde, & McKean, 2005; Strudler & Wetzel, 2008; Mullen, Britten, & McFadden, 2007). A variety of benefits of portfolios in teacher education have been identified (Milman, 2005; Reese, 2004) and there are a number of uses to which portfolios are put in teacher education programs. (Bullock & Hawk, 2001; Fox, White, Stephen, & Kidd, 2011; Strawhecker, Messersmith, & Balcom, 2008; Strudler & Wetzel, 2005).

Wetzel and Strudler's 2008 study used case methodology to determine the perspectives of teacher education faculty and administrators regarding electronic teaching portfolios. Structured interviews were conducted with teacher education faculty, administrators, and teacher candidates at six universities. Among the advantages of electronic teaching portfolios noted by teacher education faculty were a variety of opportunities for students to reflect and learn, a better understanding on the part of students of the program's teaching standards, better access by faculty to student work, and increased communication with students. The disadvantages found included an increase in time and effort for implementing the electronic portfolio process and incompatibility with some of the goals, values and needs of the faculty in regard to curriculum and academic freedom. These same advantages and disadvantages have been identified by other writers for electronic portfolios (Barrett, 2000; Devlin-Scherer, 2003; Fox, et al., 2011; Mosely, 2005; Moss, 2008; Takona, 2003).

While the literature identifies several uses of portfolios in teacher education (Barrett, 2000; Bullock & Hawk, 2001; Carney, 2004; Devlin-Scherer, 2003;

Ma & Rada, 2006; Milman, 2005; Strudler & Wetzel, 2008), their use as a tool for hiring purposes has not been as widely explored (Evan, Daniel, Mikovch, Metze, & Norman, 2006; Moss, 2008; Reese, 2004; Takona, 2003). Studies that have been done on the use of electronic portfolio in the teacher employment process have indicated mixed advantages and disadvantages (Booty, 2008; Mosley, 2005; Strawhecker, et al., 2008; Temple, Allan, & Temple, 2003; Theel & Tallerico, 2004).

Although previous studies have indicated that teacher education students believe electronic portfolios to be of use in the employment process, many of them also believe that principals tend not to view them (Wetzel and Strudler, 2006). On the other hand, Achrazoglou, Anthony, Jun, Marshall, and Roe (2002) conducted a national study that surveyed more than 500 hiring officials in school districts across the country regarding what they would like to see in the ePortfolios of teacher candidates. They reported that, "Seventy-nine percent of respondents stated that a job seeker's eportfolio can be a significant selection tool along with references, credentials, transcripts, resume and cover letter, and interviews" (p. 20).

In his 2009 study, Boody conducted phone interviews with career services personnel at 15 universities. The individual interviewed at each institution was identified as the person who spent the most time with teacher education candidates. Results of the survey indicated that, although prospective employers did not require portfolios from teacher applicants, they were often looked at when brought to the interview. Respondents believed that portfolios allowed prospective employers to see applicants as individuals and gave them an opportunity to "stand out from the crowd" and showcase their skills. Boody concluded, "Perhaps most useful of all is that creating a portfolio helps them (students) take stock of themselves. Indeed, it serves mainly to organize themselves and reflect on as they prepare ahead" (p. 69).

Mosely (2004/2005) collected information from 252 school administrators who reported being involved in the teacher employment process. Of those responding, 85% reported that they use portfolios in some capacity during the hiring process. Of those administrators who did not use portfolios as part of the hiring process the two most common reasons cited were the lack of time and the unstructured nature of portfolios.

Strawhecker, Messersmith, and Balcom's 2008 study involved 37 principals in one Midwestern state and included administrators from both public and private schools. Participants were asked to respond to a questionnaire regarding the advantages and disadvantages of using portfolios in the teacher hiring

process. In general, respondents felt that portfolios allowed them to gain a more comprehensive understanding of an applicant's actual teaching ability and organizational skills. Administrators also liked the convenience of being able to go back and view portions of the portfolio again as part of the hiring decision.

Some of the findings from Mosely's study mirrored those of Temple, et al. (2003). In that study, school administrators also noted the time factor as a drawback to using portfolios in the employment process. One suggestion administrators made was the possibility of a two-tiered portfolio, one containing a number of items and one that would include only a few very carefully selected items.

Purpose of Study

Currently, the majority of teacher education programs appear to be requiring students to develop and maintain professional portfolios, in particular electronic or ePortfolios. One of the main purposes given by teacher education programs for this requirement is the use and value of the portfolio in the employment process. However, it is unclear from the literature if school administrators who are making hiring decisions have the same beliefs and perceptions regarding the value and use of portfolios as do the teacher education faculty who are requiring the development of those portfolios. This study's focus was to answer three questions regarding the teaching portfolio's value and use in the teacher employment process. The questions explored were:

1) What are the perceptions of school administrators and teacher educators regarding the value and use of portfolios in the employment of teachers?
2) What are the perceptions of school administrators and teacher educators regarding the quality and accuracy of teaching portfolios in documenting applicants' teaching skills?
3) What are the perceptions of school administrators and teacher educators regarding the problems and barriers in the use of teaching portfolios in the hiring process?

Method

To answer these questions we developed a survey instrument consisting of twenty-one items using PsychData (http://www.psychdata.com). We selected these items from a review of the literature and from our own experiences in working with teacher education students and school administrators involved in hiring teachers. Survey items used a variety of formats including ranking, rating, multiple choice and short

answer, depending upon the nature of the item. The final survey item was an open-ended response item which allowed participants to provide any comments or observations related to the use of portfolios in the teacher hiring process.

Using websites, attendance lists from professional conferences, and state education agencies we compiled a list of e-mail addresses of teacher educators from universities in Texas, Georgia, South Carolina, Missouri, and Illinois and another list of the e-mail addresses of practicing school administrators in the same states. In all, we identified a total of 988 teacher educators and 624 school administrators. We sent an e-mail request to everyone on both e-mail lists explaining the purpose of the study along with a link to the online survey. In addition, we sent a follow-up request approximately one month later to the e-mail addresses of those who had not yet accessed the online survey. The survey settings did not allow the names or e-mail addresses of individual participants to be linked to specific responses to the survey.

Results

Of the 988 requests for participation sent to teacher educators 127 responded, a rate of 12.8%. Of the 624 school administrators invited to participate, 41 responded, a participation rate of 6.5%. Participants' responses were analyzed and compiled into frequencies and percentages for each survey item. Tables were developed to assist in the analysis and interpretation of the survey results.

One of the survey questions asked respondents the type of portfolio format used most often by those teaching candidates who provide teaching portfolios. Table 1 displays the responses of participants to that question. There are several somewhat surprising observations to be made in regard to these data. There is a large difference between the percentage of digital portfolios that teacher educators believe their graduates are using in the hiring process and the percentage that administrators report are being used (50.5% to 17.5%). According to respondents to this survey, a high percentage of teacher candidates are still presenting the more traditional, paper-based portfolios.

There could be a number of reasons why school administrators in this study did not report ePortfolios being used by the majority of teacher candidates. It could be that teacher preparation programs use ePortfolios for other purposes, but do not put as much stress on them as an employment tool. It could be that teacher candidates do not feel as comfortable using digital portfolios in job interviews and prefer to use the more traditional paper-based portfolios. Another reason could be that this study did not differentiate between portfolio usage by newly graduating teacher candidates

Table 1
Most Common Portfolio Format Used by Teaching Candidates

Question	Teacher Educators		School Administrators	
Of those teacher candidates who provide a portfolio during the interview and employment process what format is the most common?	Website: CD/DVD: Print:	34 (33.0%) 18 (17.5%) 51 (49.5%)	Website: CD/DVD: Print:	2 (5%) 5 (12.5%) 34 (82.5%)

Table 2
Perceptions Regarding the Use of Portfolios in the Teacher Hiring Process

Question	School Administrators				Teacher Educators			
Do schools prefer that prospective teachers provide a portfolio	Required: Neutral:	0% 73%	Preferred: Other:	20% 7%	Required: Neutral:	4% 68%	Preferred: Other:	15% 13%
How much weight do you give the portfolio in the hiring process?	Great deal: Some weight:	3% 58%	Equal: Little:	17% 22%	Great deal: Some weight:	15% 38%	Equal: Little:	37% 10%
In the past five years have you seen an increase in newly graduated teachers submitting a portfolio?	Significant: Same:	29% 24%	Some: Decrease:	6% 5%	Significant: Same:	15% 38%	Some: Decrease:	37% 10%
How much input have school administrators provided to local universities regarding the use of teacher portfolios?	Great deal: Little input:	0% 15%	Some: None:	6% 79%	Great deal: Little input:	4% 37%	Some: None:	29% 30%
Are universities in your area promoting the development and use of portfolios for their teacher education students?	All are: Half are:	9% 21%	Most are: Most aren't:	50% 21%	All are: Half are:	17% 26%	Most are: Most aren't:	43% 14%

Note: For the first question, school administrators listed "Do not have time" under the "Other" category and teacher educators listed "Don't want them" under the "Other" category.

and older, more experienced teacher candidates who may be more likely to use paper-based portfolios.

Table 2 shows the results of participants' responses to five survey items regarding the use and importance of portfolios in hiring teachers. These data describe the relative perceptions of school administrators and teacher educators regarding how often portfolios are used in the hiring process, how much weight they are given and the interaction between school and teacher preparation programs in the portfolio process. The perceptions of school administrators and teacher educators were very similar on most of these items. Both groups agreed that the majority of schools do not require portfolios as part of the teacher hiring process and only a relatively small percentage reported a preference for teacher portfolios in hiring new teachers.

School administrators and teacher educators agreed that portfolios are given weight in hiring decisions, although it is clear that portfolios are not given as much

consideration as several other factors. One interesting observation is that teacher educators appear to be more negative than school administrators in regard to how much weight is given to teacher portfolios. More than twice as many teacher educators, percentage-wise, perceived portfolios as having little or no weight in the hiring process. Another observation from the data in Table 2 is the seeming disconnect between school administrators and teacher educators regarding the input school administrators have in the use of teacher portfolios. Administrators overwhelmingly perceived their input to be fairly negligible, while teacher educators saw administrators as having substantially more input into the use of portfolios.

Table 3 displays the results of participants' responses to survey items regarding the quality and value of portfolios in making teacher hiring decisions. As can be seen from this table teacher educators and school administrators tended to agree that a portfolio

Table 3
Perceptions Regarding the Quality and Value of Teacher Portfolios

Statement	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree
I believe I get a clear and accurate sense for the kind of teacher a person is, or will be, based on what I see in his or her portfolio.	TE: 9% SA: 4%	TE: 37% SA: 28%	TE: 40% SA: 32%	TE: 11% SA: 28%	TE: 3% SA: 8%
Most of the portfolios I see are well-organized, creative, and interesting.	TE: 6% SA: 5%	TE: 40% SA: 49%	TE: 37% SA: 44%	TE: 10% SA: 0%	TE: 7% SA: 2%
Most of the portfolios I see contain appropriate artifacts which do an excellent job documenting and expressing the applicant's qualifications to be an excellent teacher.	TE: 9% SA: 8%	TE: 39% SA: 33%	TE: 38% SA: 51%	TE: 10% SA: 8%	TE: 4% SA: 0%

Note: TE = Teacher Educators; SA = School Administrators

can accurately reflect a teacher candidate's teaching ability and skills, although there is not strong agreement on this point from either group. Teacher educators were somewhat more certain than school administrators regarding the accuracy of the portfolio in documenting a candidate's relative effectiveness as a teacher.

Both groups agreed on the quality of portfolios in terms of their appearance, format, and technical components. There was substantial agreement that portfolios are well-organized, creative, and interesting and that they contain appropriate artifacts. The results displayed in Table 3 appear to support many of the comments made by both school administrators and teacher educators on the open-ended survey item. On that item, several respondents from both groups expressed their belief that portfolios tend to be technically sound and attractive, but that they do not always accurately reflect the quality of an applicant's teaching skills.

It appears evident from the results described in Table 3 that school administrators and teacher educators see value for portfolios in teacher hiring decisions. However, they did not perceive portfolios as having greater or even as great a value as other factors. So, exactly how important is the portfolio to the teacher hiring process in relation to other factors? Table 4 sheds some additional light on this question. According to this study both school administrators and teacher educators viewed direct observation of the candidate in a teaching situation to be the most important factor in the decision to hire. According to both school administrators and teacher educators, how teacher applicants respond to direct questions regarding teaching during a personal interview carries

substantial weight in the hiring process, as this item was ranked second by both groups.

Third in importance is the actual experience an applicant has had as a teacher. According to respondents, those involved in hiring teachers want to know if an applicant has actually demonstrated that he or she is an effective teacher. On the fourth item the two groups differed. Teacher educators perceived information from previous teacher employers to be the next most important factor, but administrators ranked personal characteristics ahead of this item. Administrators evidently have confidence in their ability to make hiring decisions based upon their personal perceptions of the candidate during the interview.

On the fifth most important factor school administrators and teacher educators differed somewhat. Teacher educators placed the reputation of the teacher preparation program as fifth in importance while school administrators placed information from previous teacher employers in that spot.

Portfolios were ranked seventh in importance by teacher educators and eighth in importance by school administrators. This indicates a belief that portfolios are useful in the teacher hiring process, but that they are not as useful as other, more direct, and objective sources of information.

Respondents to the open-ended item of this survey were grouped into three categories depending upon which of the three study questions was addressed by the comment. School administrators and teacher educators shared similar views and perception in a number of areas, but also revealed some unique observations based on their different experiences and perspectives.

Table 4
Importance of Factors Considered in Teacher Hiring

Ranking	Teacher Educators	School Administrators
First	Direct Observation	Direct Observation
Second	Personal Interview	Personal Interview
Third	Amount and Type of Previous Teaching Experience	Amount and Type of Previous Teaching Experience
Fourth	Information from Previous Teacher Employers	Personal Characteristics (personality, dress, demeanor)
Fifth	Reputation of Teacher Preparation Program	Information from Previous Teacher Employers
Sixth	Personal Characteristics (personality, dress, demeanor)	Casual Conversation with Others Regarding Students Skills and Performance
Seventh	Portfolio	References from Professors
Eighth	Casual Conversations with Others Regarding Students' Skills and Performance	Portfolios
Ninth	References from Professors	Reputation of Teacher Preparation Program
Tenth	Cover Letter and Resume'	Cover Letter and Resume'
Eleventh	GPA in Education Classes	GPA in Education Classes
Twelfth	References from Non-Education Employers	References from Non-Education Employers

Perceived quality and accuracy of teaching portfolios in documenting applicants' teaching skills. Several school administrators noted that, although there is definite value in using portfolios to make hiring decisions, they do not believe that portfolios give an accurate indication of an applicant's teaching ability. The following comments by school administrators are reflective of this belief:

- While they are a good tool that allows a prospective teacher to showcase some of their skills, they are not a particularly effective measure of how that person will perform in the classroom.
- Portfolios are not that valuable as a measure of a teacher's potential success in interacting with and teaching children.

Even teacher educators, who it would be presumed play an important role in how teacher candidates structure their portfolios, found this to be a problem:

- It has been my experience (and, to be honest, it has been a while since I have seen or judged teachers based on portfolios) that candidate-chosen items for the portfolio often present little more than a dog-and-pony type of snapshot.
- They are too prescribed and the students are selecting artifacts to meet requirements (not best work).

Many respondents reported this perceived lack of authenticity to be a major drawback to the value of teacher portfolios for employment purposes:

- Portfolios are cumbersome to an interview committee and with the vast majority of portfolios being compiled as a college course requirement they are strikingly similar and tell me very little.
- They focus on organization, glossy photos, pretty bulletin boards, well-written papers, glowing student teaching reviews from supervisors, and a portfolio that was polished for a grade. They give me very little relevant information about a candidate. I prefer to not be given a portfolio by a candidate.

Some administrators see the use of ePortfolios as one way of overcoming this hesitancy regarding the ability of portfolios to accurately reflect teaching ability.

- I believe electronic portfolios are best and should include a brief video clip of the teacher candidate teaching in a real classroom setting.

Problems/barriers regarding the portfolio in the employment process. In addition to the perceived lack of authenticity, many respondents reported other barriers in the use of portfolios for teacher employment. A serious problem identified by both administrators and

teacher educators was that of time, as described by several school administrators:

- Actually it's a bit frustrating when a candidate brings their portfolio to the interview. There is little time to peruse the material and I hate to keep it. A digital portfolio would be ideal for me.
- While portfolios may be a great tool for the evaluation of teaching candidates, the logistics of reviewing full portfolios becomes difficult when dealing with large numbers. Electronic portfolios would be preferable.

This concern was also shared by teacher educators:

- My administrators rarely look at my student teachers' portfolios - they say they don't have the time.
- Some teachers have overwhelmingly large portfolios--big time overkill.

Value and use of the portfolio in the teacher employment process. Despite their concerns, a number of respondents did report that they see the teacher portfolio as a useful tool in the employment process, but varied in their perceptions of how useful. Some teacher educators considered portfolios as helpful in giving prospective teachers a slight advantage in the employment process as illustrated by the following comments:

- I believe portfolios are useful tools for the employment process especially with a narrowing of the field of applicants.
- Electronic portfolios, aside from affording the candidate a creative and organized way of presenting his/her outstanding qualities, also reveal the candidate's ability to effectively use technology.

This value was also shared by a number of school administrators responding to the survey. As several administrators noted,

- Portfolios help give the interviewer a sense of what the teacher has done in the classroom. I think it also gives a frame of reference for the interview.
- A portfolio would help us to know what level that person would be able to proceed to once she/he has been assigned a classroom.

This perception was also echoed by some teacher educators,

- I see portfolios as a benefit to the teacher candidate in that it gives them language and examples by which they can answer interview questions. If they can talk through the benchmarks of the portfolio, they will make an impression with the principal and/or grade level team.
- We have used portfolios for several years, but they have not been instrumental in the hiring process. We are going digital this semester and I hope that the students will be more comfortable using them as part of the application process.

As one school administrator pointed out, the portfolio can serve as a very valuable complement to the interview process:

- Portfolios are a nice addition to a strong interview as evidence of things (hopefully) heard and discussed in the interview process.

However, portfolios are not considered useful as a stand-alone component in the interview or employment process:

- Portfolios are a great tool, when the candidate can speak to the document. It is not the document that presents a person, yet it can help to indicate the level of instruction, knowledge, and practice that they have received in preparation for the classroom. (School Administrator)
- I think that portfolios, especially the electronic ones, are helpful to a prospective employer. However, it doesn't begin to replace the face-to-face response to questions that indicate the person's philosophy. A written philosophy is one thing; the actual beliefs are shown more in actions and responses to well crafted questions. We encourage our students to create electronic portfolios that paint a picture of them as a professional that can be previewed pre or post interview. (Teacher Educator)

Administrators and teacher educators reported that the portfolios' biggest value in the employment process was its use in self-reflection:

- Portfolios are important for self reflection. Portfolios are valuable for novice teachers in developing a comprehensive model of their work and pre-work. (School Administrator)

- We do not use our portfolio as an interview portfolio. It is a progress portfolio, providing a context for the teacher candidate to reflect on personal professional development. Teacher Educator)
- The portfolio is a way for the candidate to reflect upon their teaching and also to explain it to the rest of the teaching community. (Teacher Educator)

Perhaps the overall benefits of teacher portfolios was summed up by one teacher educator who commented,

- The development of the portfolio can be a powerful process for interview preparation as the candidate reflects on what he/she knows, believes and can do in relation to teaching. It structures the practice of articulating in professional terms the candidate's skills and experience. It also provides the faculty with program assessment information.

Discussion

One limitation of this study is the low response rate of 12.8% for teacher educators and 6.5% of school administrators.   However, a large initial pool of prospective participants was initially assembled in anticipation of a low response rate and the participation does represent a fairly wide range of institutions, school administrators and teacher education faculty.

Another limitation was discussed earlier in regard to the lack of differentiation between newly graduated teacher candidates and those that have been teaching for a while. This limitation makes it difficult to analyze the possible reasons for the apparent preference for paper-based portfolios as opposed to ePortfolios.

In regard to the questions posed by this study, the following conclusions can be drawn.

Question 1: What are the perceptions of school administrators and teacher educators regarding the value and use of portfolios in the employment of teachers?

The findings of this study indicate that school administrators and teacher educators agree that there is value in using portfolios in the teacher hiring process. While both groups acknowledge the usefulness of portfolios, both see them as one of several tools to be used in teacher employment decisions. In this regard, the present study was in agreement with Achrazoglou, Anthony, Jun, Marshall, and Roe's 2002 study in which 79% of their participants viewed an ePortfolio as a useful tool for teacher employment.

Respondents in this study perceived portfolios as helping employers to get a better overall picture of teacher applicants. Respondents also reported that portfolios can help give school administrators a frame of reference when interviewing candidates and can also assist in reviewing and evaluating candidates after the interview process is completed.

One conclusion that could be drawn from this study is that teacher applicants may derive more value from portfolios than do those who are involving in hiring teachers. Respondents in this study noted the value of portfolios in helping prospective teachers reflect on their abilities and skills and to anticipate and organize answers to possible interview questions. In this regard the portfolio can be an excellent tool for teacher applicants in preparing for job interviews. This agrees with other writers, such as Milman (2005), who noted the value of a portfolio in helping applicants develop self-confidence in their teaching skills.

Another value of the portfolio as indicated by this study is that it can provide applicants with the opportunity to distinguish themselves from the applicant field by the type and quality of their portfolio items and by using the portfolio to highlight their strengths as a teacher. This agrees with Boody's (2009) finding that "a major value of portfolios for students is that they can help close the sale and showcase their skills" (p. 69).

Question 2: What are the perceptions of school administrators and teacher educators regarding the quality and accuracy of teaching portfolios in documenting applicants' teaching skills?

Respondents in this study reported that portfolios were, in general, pleasing in appearance and usually impressive in their design and format; however, respondents did not necessarily see that as a positive factor. Respondents reported a certain sameness or "cookie cutter" appearance to many portfolios that, while technically attractive, did not necessarily give them confidence in the portfolio's accuracy in documenting the applicant's teaching ability. This is consistent with Theel and Tallerico (2004) who found that principals in their study perceived a "sameness" in the content and format of portfolios presented by teaching applicants.

Question 3: What are the perceptions of school administrators and teacher educators regarding the problems and barriers in the use of teaching portfolios in the hiring process?

Respondents in this study identified several problems with the use of portfolios in the hiring process and several barriers to their effectiveness. The one

problem mentioned most often was the skepticism regarding portfolios' accuracy in demonstrating the applicants' actual teaching skills and ability. The fact that applicants self-select items for the portfolio and can structure and present it in a way that puts them in the best possible light creates doubts among hiring personnel regarding the confidence that can be placed in the portfolio.

Another significant problem identified was that of time. Both teacher educators and administrators see time as a major barrier to the use of portfolios. School administrators are very busy people and the process of interviewing and hiring teachers is limited by serious time constraints. This makes it very difficult for them to give more than a cursory review of applicants' portfolios. This was consistent with what other studies have also revealed about the use of portfolios in the hiring process (Allan & Temple, 2003; Strawhecker, et al., 2008).

Recommendations

The purpose of this study was to determine the perceptions of teacher educators and school administrators regarding the value and use of portfolios, in particular ePortfolios, in the hiring of teachers. Based on the results of this study, a number of recommendations can be made that may improve the value and the use of teaching portfolios in the employment process.

1.　School administrators and teacher educators both reported time as being a major barrier to the effective use of portfolios in the process of teacher employment. As a result, teacher applicants should reduce the amount of time it takes school administrators to view portfolios. This could be done by being more selective in the items included to reduce the size of the portfolio and make items more focused on those areas that more accurately document teaching skills and ability. Teacher educators should work with their students to insure that efficiency and the "time factor" is a major consideration in the development of portfolios for employment.

2.　It was noted by a number of respondents that portfolios serve other purposes in addition to their use in the employment process. In that regard, teacher educators should work with their students to produce various forms of their portfolios for different purposes. Rather than try to make a one-size-fits-all portfolio, teacher applicants could design various versions of their portfolios for specific purposes including a version focused on

those items, issues, and formats most useful and beneficial to school administrators.

3.　This study indicates that there is often a tendency to go a little over the top in the "bells and whistles" that are included in teaching portfolios. Teaching applicants may be trying a little too hard to impress prospective employers with their creativity and style, rather than on accurately documenting their teaching skills and ability in the most authentic way possible. While portfolios should be well-organized, thorough, interesting, and easy to read, the focus should remain on their true purpose, which is to accurately document the teaching candidate's preparation to be a successful teacher.

4.　School administrators in this study did not report much involvement or input in the design and development of portfolios in teacher education programs. Involving them more in a meaningful and continuous manner may result in portfolios that are more useful and valuable to them in hiring applicants.

5.　Respondents reported that portfolios have value in the employment process, but they are only one tool in that process. Teacher educators should work with their students, along with input from school administrators, regarding the portfolio's place in the hiring process. Rather than a separate, stand-alone component it should be integrated into the total interview and hiring process. For instance, some respondents noted that the real value of the portfolio is in how well the applicant could articulate what the portfolio says about their teaching skills. By not focusing on just the development of the portfolio, but also on how to use the portfolio, teacher applicants may be able to increase the value of the portfolio as an employment tool.

6.　A number of the issues and barriers discussed regarding the effective use of portfolios in the teacher hiring process could be alleviated with more wide-spread use of ePortfolios as opposed to paper-based portfolios. For instance, the time factor could be controlled much better with ePortfolios, particularly those that are web-based. The digital and hypermedia capabilities of such portfolios can make the selecting, organizing and viewing of portfolio items much more efficient. The criticism regarding "sameness" of format could also be better addressed by the use of ePortfolios as opposed to paper portfolios. Easily available

technology tools offer an almost endless array of options for presenting and viewing ePortfolios. Finally, the flexibility afforded by ePortfolios makes it much easier for teacher candidates to shape and focus their portfolios for specific audiences and employment settings.

References

Abrami, P. C., & Barrett, H. (2005). Directions for research and development on electronic portfolios. *Canadian Journal of Learning and Technology, 31*(3). Retrieved from http://www.cjlt.ca/index.php/cjlt/article/viewArticle/92/86

Achrazoglou, J., Anthony, R., Jun, M. K., Marshall, J., & Roe, G. (2002). *A white paper on performance assessment in teacher education: The Iowa ePortfolio model*. Retrieved from http://news-releases.uiowa.edu/2002/october/1030eportfolio.html

Amarian, S., & Flanigan, E. (2006). *Create your digital portfolio: The fast track to career success*. Indianapolis, IN: JIST.

Barrett, H. C. (2000). *Electronic teaching portfolios: Multimedia skills + portfolio development = powerful professional development*. Paper presented at the Society for Information Technology and Teacher Education International Conference, San Diego, CA.

Barrett, H. C., & Wilkerson, J. (2004). *Conflicting paradigms in electronic portfolio approaches*. Retrieved from http://electronicportfolios.com/systems/paradigms.html

Boody, R. E. (2009). Career services perspectives on the use of portfolios in the teacher employment process: A survey. *Education, 130*(1), 67-71.

Boody, R. E., & Montecinos, C. (1997). Hiring a new teacher? Ask for a portfolio. *Principal, 77*(1), 34-35.

Bowers, S. E. (2005). The portfolio process: Questions for implementation and practice. *College Student Journal, 39*, 754-758.

Buckridge, M. (2008). Teaching portfolios: Their role in teaching and learning policy. *International Journal for Academic Development, 13*(2), 117-127.

Bullock, A. A., & Hawk, P. P. (2001). *Professional portfolios for practicing teachers,* Bloomington, IN: Phi Delta Kappa Educational Foundation.

Borgen, W. A., Amundson, N. E., & Reuter, J. (2004). Using portfolios to enhance career resilience. *Journal of Employment Counseling, 41*, 50-59.

Carney, J. (2004). Setting an agenda for electronic portfolio research: A framework for evaluating portfolio literature. Retrieved from http://it.wce.wwu.edu/carney/Presentations/AERA04/AERAresearchlit.pdf

Devlin-Scherer, R. (2003). Preservice professional employment portfolios for middle school. *Essays in Education*, Department of Education, University of South Carolina-Aiken.

Evans, S., Daniel, T., Mikovich, A., & Norman, A. (2006). The use of technology in portfolio assessment of teacher education candidates. *Journal of Technology and Teacher Education, 14*(1), 5-27.

Fox, R. K., White, C. S., & Kidd, J. K. (2011). Program portfolios: Documenting teachers' growth in reflection-based inquiry. *Teachers and Teaching: Theory and Practice, 17*(1), 149-167.

Garis, J. W. (2007). e-Portfolios: Concepts, designs, and integration within student affairs. *New Directions for Student Services, 199*.

Gathercoal, P., Love, D., & McKean, G. (2005). Establishing the culture & realizing the promise of Webfolios in education. *Journal of Interactive Instruction Development, 17*, 3-18.

Goldsmith, D. J. (2007). Enhancing learning and assessment through e-portfolios: A collaborative effort in Connecticut. *New Directions for Student Servicies, 119*.

Lin, Q. (2008). Preservice teachers' learning experiences of constructing e-portfolios online. *Internet and Higher Education, 11*, 194-200.

Lorenzo, G., & Oblinger, D. (2005). An overview of e-portfolios. *Educause Learning Initiative*. Retrieved from http://net.educause.edu/ir/library/pdf/ELI3001.pdf

Ma, X., & Rada, R. (2006). Individual effects of a web-based accountability system in a teacher education program. *Journal of Computing in Teacher Education, 22*(3), 111-119.

Martin-Kniep, G. O. (1999). *Capturing the wisdom of portfolios: Professional portfolios for educators*. Alexandria, VA: Association for Supervision & Curriculum Development.

Milman, N. B. (2005). Web-based digital teaching portfolios: Fostering reflection and technology competence in preservice teacher education students. *Journal of Technology and Teacher Education, 13*(3), 373-396.

Mittendorff, K., Jochems, W., Meijers, F., & Brok, P. (2008). Differences and similarities in the use of the portfolio and personal development plan for career guidance in various vocational schools in the Netherlands. *Journal of Vocational Education & Training, 60*(1), 5-9.

Mosely, C. (2004-2005). The value of professional teaching portfolios to prospective employers: School administrators' views. *The Professional Educator, 27*(1&2), 58-72.

Moss, G. (2008). Developing a critical lens among pre-service teachers while working within mandated performance-based assessment systems. *Teacher Education and Practice, 21*(2), 146-159.

Mullen, L., Britten, J., & McFadden, J. (2005). *Digital portfolios in teacher education*. Indianapolis, IN: JIST Works Publishing.

Newman, D., Mountain, L., Cohen, M., Asaro, K., & Spaulding, D. (2004). Interactive electronic portfolios: Documenting educators' professional development. In J. J. Nall & R. Robson (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 1396-1401). Chesapeake, VA: AACE. Retrieved from http://www.editlib.org/p/11527

Nikirk, M. (2008). Digital portfolios: Powerful marketing tool for communications students. *Tech Directions* (December).

Ntuli, E., Jared, K., & Kyei-Blankson, L. (2009). Electronic portfolios in teacher education: A case study of early childhood teacher candidates. *Journal of Early Childhood Education, 37*, 121–126.

Oradinii, F., & Saunders, G. (2007). Introducing e-portfolios across a paper dominated university. *The Association for Learning Technology Online Newsletter*, *10.* Retrieved from http://newsweaver.co.uk/alt/e_article000925026.cfm

Reese, S. (2004). Teacher portfolios: Displaying the art of teaching. *Techniques: Connecting Education and Careers*, *79*(5), 18-21.

Ross, S., Maclachlan, A., & Cleland, J. (2009). Students' attitudes towards the introduction of a personal and professional development portfolio: Potential barriers and facilitators. *BMC Medical Education*, *9*(69).

Salzman, S., Denner, P., & Harris, L. (2002). *Teaching education outcomes measures: Special study survey*. Paper presented at the Annual Meeting of the American Association of Colleges of Teacher Education, New York, NY.

Stemmer, P., Brown, B., & Smith, C. (1992). The employability skills portfolio. *Educational Leadership*, *49*(6), 32-35.

Strawhecker, J., Messersmith, K., & Balcom, A. (2007-2008). The role of electronic portfolios in the hiring of K-12 teachers. *Journal of Computing in Teacher Education, 24*(2), 65-71.

Strudler, N., & Wetzel, K. (2005). The diffusion of electronic portfolios in teacher education: Issues of initiation and implementation. *Journal of Research on Technology in Education*, *37*(4), 411-432.

Strudler, N., & Wetzel, K. (2008). Costs and benefits of electronic portfolios in teacher education: Faculty perspective. *Journal of Computing in Teacher Education*, *24*(4), 135-141.

Takona, J. P. (2002). *Pre-service teacher portfolio development*. Lincoln, NE: Writers Club Press.

Temple, V. A., Allan, B., & Temple, W. N. (2003). *Employers' and students' perceptions of electronic employment portfolios*. Retrieved from www.aare.edu.au/03pap/tem03523.pdf

Theel, R. K., & Tallerico, M. (2004). Using portfolios for teacher hiring: Insights from school principals. *Action in Teacher Education*, *16*(1), 26-33.

Tubaishat, A., Lansari, A., & Al-Rawi, A. (2009). E-portfolio assessment system for an outcome-based information technology curriculum. *Journal of Information Technology Education: Innovations in Practice*, *8*, 44-54.

Wetzel, K., & Strudler, N. (2006). Costs and benefits of electronic portfolios in teacher education: Student voices. *Journal of Computing in Teacher Education, 22*(3), 69-78.

Willis, L., & Wilkie, L. (2009). Digital career portfolios: Expanding institutional opportunities. *Journal of Employment Counseling, 46*, 73-81.

Woodbury, D., Addams, L., & Neal, W. (2009). The career portfolio: A practical job search tool. *Journal of College Teaching & Learning*, *6*(4), 7-14.

Yao, Y., Thomas, M., Nickens, N., Downing, A., Burkett, R., & Lamson, S. (2008). Validity evidence of an electronic portfolio for preservice teachers. *Educational Measurement: Issues and Practice*, *27*(1), 10-24.

Zubizaretta, J. (2004). *The learning portfolio: Reflective practice for student learning*. Bolton, MA: Anker Publishing Company.

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Acknowledgements

Situated Learning: A Theoretical Frame to Guide Transformational Change Using Electronic Portfolio Technology

Trent Batson

The Association for Authentic, Experiential and Evidence-Based Learning

Efforts to help faculty adopt electronic portfolios are weakened by the lack of a consensus in the electronic portfolio field about its guiding learning theory: What theoretical framework are we moving *from* and what theoretical framework are we moving *toward* when we adopt electronic portfolios in transformative ways? There is promising research into how adults learn that is worth exploring. This research, especially over the past 30 years, has broadened in scope, including and synthesizing vital findings from a wide array of scientific fields beyond the traditional research in education or psychology, including anthropology, social science, cognitive science, linguistics, and others. Findings and analyses that synthesize this broader perspective on the social and experiential aspects of learning can help the electronic portfolio field develop its own theoretical grounding. One prominent idea, in particular, is germane to the developmental work in our field: This is the idea that experience is necessary for all learning. From this gathering consensus among learning researchers about the importance of *experience,* a concept developed about how adults learn best, called *situated learning*, a humanistic view of learning that envisions learning in real life occurring constantly, outside of the classroom as well as in the classroom. This holistic consensus fits our time, our new distributed knowledge-building structures and learning technologies, and the work our graduates will be doing. At the same time, this situated learning consensus calls into question the teacher-centric practices that dominate education. Using the frame of situated learning to inspire and organize electronic portfolio research provides educational institutions a rational path toward transformation appropriate to our time.

Anachronistic Behaviorism Receding as Active Learning Spreads

Situated learning and its core principle, that adult learning starts with individual experience, runs counter to the dominant behaviorist (stimulus-response) theory on which higher education is, perhaps unwittingly, built today. Behaviorism, in any of its varying types, values the external behavior of students and not their internal psychological state (Graham, 2010). According to Graham, "Behaviorism, the doctrine, is committed in its fullest and most complete sense to the truth of the following three sets of claims:

1. Psychology is the science of behavior. Psychology is not the science of mind.
2. Behavior can be described and explained without making ultimate reference to mental events or to internal psychological processes. The sources of behavior are external (in the environment), not internal (in the mind, in the head).
3. In the course of theory development in psychology, if, somehow, mental terms or concepts are deployed in describing or explaining behavior, then either (a) these terms or concepts should be eliminated and replaced by behavioral terms or (b) they can and should be translated or paraphrased into behavioral concepts." (Graham, 2010)

In other words, ignore the student as a person and just design conditioning. It does not matter if students are actually quite different because education designed using the doctrine of behaviorism treats them the same.

Behaviorists sought to "understand how environmental events control behavior, discover and elucidate causal regularities or laws or functional relations which govern the formation of associations, and predict how behavior will change as the environment changes" (Graham). We can see how the behaviorist perspective could then conceive of teaching as "conditioning." Behaviorism was popular from the 1920 to the 1950s. Perhaps educational leaders of the time saw behaviorism as a strong affirmation in theoretical terms of the teacher-centered, seat-time, and credit system that had solidified in higher education around the turn of the 20th century.

The understanding of learning, then, was based on inferences from behavior. It is fairly easy to see how higher education continued to build out an enterprise that conceived of students as objects to be "conditioned." In this framework, all learners are alike, the teacher is the sole active agent, and the results of the teacher's "intervention" are predictable. In other words, according to behaviorism, students are passive learners, the teacher's lecture or teacher-led discussion is the active intervention, and the evaluative test is the proof of the success of the intervention. According to behaviorists, all that counts is behavior and all that can be understood is behavior.

This framework led to the belief (now tacit and therefore unchallenged) that receiving doses of the intervention – lectures from teachers accompanied by assigned reading and teacher led discussions – in a prescribed series (the curriculum) would produce uniform, mechanistic "changes in behavior" that could be tested with standardized testing. It is a theory centered on the undifferentiated *individual* learner, without acknowledging that learning is in any way social. This tacit theoretical framework has persisted in practice for decades but the descriptor – "behaviorism" – has slipped from common parlance. The mechanistic system we work within is therefore now just assumed to be what we do; it is what we *start* with and all other approaches are "alternative approaches." Those who advocate change by using a new approach are challenged to "prove that it works." No one is asked to prove that the current behaviorist framework works. If faculty members and others on campus understood the implications of our current *de facto* learning theory, they might understand more clearly why teaching can seem so hard and might be more willing to change. And if faculty members understand more clearly how to implement an alternative learning theory more appropriate to the times, they might be more open to adopting a learning theory – situated learning – that is closer to what some of them believe personally.

Technology has altered our culture and our perception of our individual selves in radical ways, especially over the past 7 or 8 years with the advent of social media (the Web and its myriad applications that have allowed humans to create social groups as never before and perhaps to understand the social nature of humans more clearly). Our perceptions of how human beings think and learn are even more in contrast to behaviorism than before social media. Technology, therefore, has only accelerated an uneasy sense that we are stuck in an increasingly archaic teaching model. The current system is a powerful deterrent to any fundamental change, possibly because no one knows any longer what that system is based upon. In the 1950s or earlier, somehow higher education practice adopted aspects of behaviorism and then forgot, as an enterprise, that we did so. We are on auto-pilot, it would seem, though instances of "alternate learning" practices on most campuses suggest that many educators feel a desire to change that has not yet evolved into a new epistemology of learning, leaving faculty, administrators and faculty development staff uncomfortable with current practice but uncertain how to change.

Where is behaviorism today? Of his recent book, *Contemporary Theories of Learning: Learning Theorists ... In Their Own Words*, author Knud Illeris prefaces, "readers will look in vain for chapters referring mainly to the classic behaviorist conception of learning – partly because not many new contributions to this school

appear, and partly because, in my understanding, this school deals with such a small corner of the vast field of learning that, in relation to human learning, it is only of interest concerning some very special fields of early learning, re-training and certain groups of mentally handicapped learners" (2009, xii-xiii).

In a time of stability, *teaching* makes sense. In a time of rapid change, the emphasis must be on *learning* (Rogers, C., 2002). Until recently, education enjoyed relative stability over a long period of time. Therefore, quite reasonably, teaching was emphasized. We had the Great Books movement a century ago, conveying the sense that academic knowledge was fully formed. In that atmosphere, teaching, as opposed to a focus on learning, made sense. But, now, it is harder to be content and secure in the stability of disciplinary knowledge. With the total amount of human information doubling every few months, stability is impossible. It is now more appropriate for teachers and students to work as co-researchers so both can keep up with change. All aspects of society are affected; most importantly, the nature of work throughout our society has altered – an emphasis on innovation instead of repetition -- and different qualities are expected in college graduates.

Those academic leaders who see the need for enterprise levels of change are faced with a web of entrenched processes and human structures and expectations so complex and immoveable, they are left stymied or hopeless. Not only don't they know *how* to change the enterprise to deal with constant change but they also don't know what shape the new enterprise should take. Behaviorism, or whatever hybrid of behaviorism we now abide by, has been entrenched for so long, and the enterprise is so wed to its implications, they are faced with untangling a vast web in order to begin the process of transformation.

Recently, George Kuh described a set of "high impact practices," suggesting ways in which the tangled web may already be unraveling:

- First-Year Seminars and Experiences (connecting new students to the academic community);
- Common Intellectual Experiences (general education with a strong integrative mechanism);
- Learning Communities (learning is social);
- Writing-Intensive Courses (writing used in courses in all parts of the curriculum);
- Collaborative Assignments and Projects (beyond behaviorism);
- Undergraduate Research ("involve students with actively contested questions");
- Diversity/Global Learning (broadening the canon; challenging assumptions);
- Service Learning, Community-Based Learning (learning starts with experience);

- Internships (active learning); and
- Capstone Courses and Projects (reflecting, connecting and synthesizing). (Kuh, 2008)

These practices recognize the social nature of learning (communities of practice), the necessity for an authentic (discipline specific) context for writing, active and experiential learning, and engaging students in real-life controversy – "actively contested questions."

Underlying these practices is an emphasis on active student learning both inside and outside the classroom. Missing from this list are other parts of student life, such as sports that can literally be "high impact," student organizations, or student social life. Learning – valuable and integrative learning -- does not stop and start; nor, of course, does it stop at graduation.

How is "learning" to be distinguished from human activity as such?

> Within cognitive theories it has been assumed that learning and development are distinctive processes, not to be confused with the more general category of human activity. This involves two theoretical claims that are in question here: One is that actors' relations with knowledge-in-activity are static and do not change except when subjected to special periods of 'learning' or 'development.' The other is that institutional arrangements for inculcating knowledge *are* the necessary, special circumstances for learning, separate from everyday practices (Lave, 2009, p. 203).

Lave objects to the idea that "real" learning occurs only in the classroom. From a situated learning perspective, the classroom (special periods of "learning" or "development") is an essential part of the learning process, but only a part.

How can learning that occurs outside of "special" circumstances not be considered authentic and academic? It may be that learning outside of special circumstances has been "invisible." Yet, it is as vital as learning within special circumstances:

> Humanist learning theories stress once more the active nature of the learner. Indeed, the learner's actions largely create the learning situation. They emphasize the urges and drives of the personality, movements towards (for example) increased autonomy and competence, the compulsion towards growth and development, the active search for meaning, the fulfillment of goals that individuals set for themselves. They stress the particular social settings within which learning operates. (Harrison et al., 2002, pp. 11-12)

The gradual move to these active and holistic practices in higher education (an increasing number of departments require an element of discipline-specific *practice*), many of them decades-old and embedded in communities of practice, has yet to reach a scale of involvement sufficient to affect the monolithic structure of higher education, the notion of seat time and credit, the still predominant emphasis on teaching, and the massive dedication to stimulus-response approaches (behaviorism). How is the impulse to include more active and holistic practices in the curriculum affected by the rush to "accountability" and high-stakes testing? At one end, those employing high-impact practices are pulling academia toward humanistic learning while at the other end devotees to stimulus-response (touting high stakes standardized testing and pointing to "accountability") pull academia to a stronger commitment to the status quo.

But, devotees in neither camp address the most obvious factor: digital technologies. How our culture creates knowledge has totally altered under our feet. The Web extends knowledge everywhere instantly, all the time, and in multiple forms. Researchers, writers, students, faculty and the entire educated and connected global Internet culture creates and processes information billions of times faster than 15 years ago. Still, the reality is that higher education was built to perpetuate *stable* knowledge but now exists in a time when very little knowledge is stable. "Accountability" cannot address a change of that magnitude. To argue one educational approach or another without considering the disrupted equilibrium of knowledge structures resulting from digital technologies cannot lead to a usable, or even relevant, resolution.

The very technology that we have used to rupture the equilibrium of the educational enterprise is also well suited to *manage* the transformation of institutions to be consonant with the new structures we now live within. For example, learning occurring at all times in all situations, because it is beyond the reach of the teacher, cannot be captured and assessed well by traditional testing technologies, but *can be* captured, shared, revised, assessed, presented, re-assessed, reflected upon, and integrated using electronic portfolios and the technologies that feed data to the portfolios. To keep value in higher education, ramping up behaviorism is counter-productive; instead, it is better to re-design a system based on situated learning, a theory that places student *experience* at the center of learning designs.

The theories of transformational learning (Kegan) and situated learning (Lave) together suggest a new epistemology (an educational world view) not based on unchanging and disconnected knowledge but instead on the constantly changing, socially and culturally-

embedded knowledge-building processes we live within today. The electronic portfolio field can make use of current research into learning to provide a coherent, theory-driven, all-encompassing architecture for a revitalized higher education enterprise. Using the powerful concepts of current learning theory, the electronic portfolio field can lead intelligent change in higher education.

Implications of a New Learning Epistemology

The new epistemology of learning based solidly on an amalgam of recent learning theories can be implemented effectively – put into practice -- with the help of our new technologies. Of most use for the electronic portfolio field, I believe, is *situated learning* as refined and described by the researcher Jean Lave. Lave's definition of situated learning suggests "learning as it normally occurs is a function of the activity, context and culture in which it occurs (i.e., it is situated). This contrasts with most classroom learning activities which involve knowledge which is abstract and out of context" (Kearsley, 2011). Learning that is situated *in context* might consist of fieldwork, experiences during an internship, laboratory experiences, experiences of working with a team of peers to develop a Web site about a current scientific controversy, and other active learning experiences. Today's technologies free students to use a much greater variety of learning interactions than before we had digital technologies. With these technologies, student work is still "visible" to the teacher no matter where the student is physically. And through opening the world more fully to regular learning experiences, we are at the same time accepting that knowledge is not only told but is discovered, that knowledge is not finished as it has seemed to be, but is instead always unfinished, always in discovery, always being re-interpreted.

If knowledge is not finished, behaviorism is not a logical approach to learning. The use of the word "content" as a reference to knowledge is based in the belief that knowledge is finished and is a commodity. If it is a commodity, then it can be "delivered." And with this set of terms and behaviorist and mercantile misconceptions, learning was reduced to such a simplistic formula that it gave rise to questionable claims made by commercial initiatives. Those who talk of education as "delivering content" not only ignore the complexity of actual learning, but also trivialize education itself.

At the center of our dilemma are several foundational and important questions as we think about re-designing higher education around current learning theory:

- Does the knowledge of the course pre-exist the course?
- Does knowledge exist as a separate entity?
- Is knowledge transmitted or discovered?
- Does knowledge start at the conceptual level or at the experience level?

Many will say immediately, "of course knowledge pre-exists the course." They'll point to books and the knowledge of the professor and the discipline. But the question is not whether knowledge pre-exists, but whether the specific knowledge developed during the time of the course existed before. Obviously, the answer has to be "no" since that "new" knowledge grew from the interactions during the course. It could not have existed before the course.

Logically, then, we must ask if knowledge *ever* truly exists separate from knowers or learners. Certainly, we have multitudes of interpretations or expressions of knowledge, but that is not knowledge itself: they are steps toward or guides to knowledge, but not knowledge itself.   They are external representations of the knowledge in our heads.

If knowledge does not exist as a separate entity, then it cannot be transmitted. Knowledge is in the *interaction* between people, and constantly in process and constantly changing.   A learner discovers knowledge through interaction with others and with resources.

A consistent criticism of stimulus and response (behaviorism) among learning researchers is that the agent (teacher) has already arrived at the conceptual level in a particular aspect of knowledge and, instead of allowing learners to repeat the process by which the agent arrived at the concepts, the agent simply transmits the concepts.   But, the consensus is that learning usually starts with experience, moves to perception, and may then move on to a conceptual level.   The teacher, following current practice, may be truncating the natural learning process for the students and their learning may then be imperfect, ungrounded, and generally less memorable or meaningful than if students had instead been invited to discover the knowledge themselves.

According to Brown, Collins, and Duguid (1989), "the epistemology that has guided educational practice has concentrated primarily on conceptual representation and made its relation to objects in the world problematic by assuming that, cognitively, representation is prior to all else" (p. 41).

Concepts are presented, essentially, in a vacuum, and students then may have difficulty applying the concepts in the world.

Once we have gone past the deep belief that knowledge exists separate from humans – in reality, only an *abstraction* of knowledge exists in books, for example

– but that instead it exists in social interaction, then we see knowledge as flow, as discourse, or as discovery (research). Knowledge is, then, a verb, not a noun (not "content" and not a commodity). Once we see knowledge in its social and cultural context, like language, constantly morphing, using the stimulus-response method of teaching as the primary, default approach to student learning seems incongruous. The current disproportionate emphasis on stimulus-response conforms to the business model of higher education, and to a previous version of learned human culture, but not at all to our general understanding of learning today.

In a time of rapid and disorienting change, the only recourse is to try new ways to understand what is happening. One must shift into learning mode, away from the over-emphasis on stimulus-response. The focus must be on the active learner seeking experiences to help her survive and thrive in a culture-in-motion.

Once learners are listening less and acting more, the convenience of a single treatment for all learners has gone. Learners scattering into vital experiential learning opportunities out in the world presents a serious challenge for traditional means of assessment. One way to address that challenge is for students to gather *relevant evidence* of their learning and collect that evidence on the Web, in any format. That evidence can be reviewed and used for purposes ranging from assessment of the work to integration of multiple kinds of evidence over time and on to capstone courses and for career purposes. This is situated, active learning, the kind of learning fitted to today's circumstances, a digital world that will not sit still.

The World Wide Web and myriad Web-based applications support but also, because of their deep immersion in our culture, demand situated learning: these applications combined with the increased speed of data processing and the infusion of technology into all business and manufacturing processes, together, created "the knowledge economy," emphasizing innovation and change.

There are multiple applications that could and do help students engage in the situated, evidence-gathering activities that are appropriate to prepare for the knowledge economy, but our focus here is on one particular application called electronic portfolios. Electronic portfolios provide most of the capabilities to manage a course of study designed around situated learning. They have been adopted around the world and dozens of corporations provide electronic portfolio technology. They are, therefore, solidly supported and widely used. A robust global community of practice centered on electronic portfolios has emerged.

How can current learning theory provide impetus to move toward a broader array of learning experiences using the default academic technologies of today? Learning theories over the past 30 years have not coalesced around one exclusive theory. Instead, they present us with many frameworks. One general consensus is that experience related to what one is trying to learn is usually the necessary and "natural" starting point.

Though I am referring to "theories" in this paper, they arose from experimentation or studies and peer review and interdisciplinary discussion and are therefore grounded in various fields and are predictive. In addition, the success in recent years of high-impact practices provides further documentation of the predictive value of these theories, since high-impact practices embody many of these theories. High impact practices are grounded in student experience. Lacking in learning theory literature – despite it being so valuable for re-consideration of our current learning enterprise -- is consideration of the effects of *information technology*. The move from theory to practice appears in the learning theory texts, but the practices that are described are still embedded in a traditional teacher-centered model, sans technology: an odd failure of imagination.

Current theories, in most cases, envision a shift in agency from the teacher to the student. This vision is very hard to actualize if students have no tools to assume agency or to conform to institutional demands for assessment. When agency is assumed by the student but evidence of what that agency produced or acquired is absent – save a report or two – it is easy for others to question the academic rigor of the agency (such as engaging in an internship). High-impact practices they may be but if most of the impact is ineffable, the impact cannot be built upon except in the mind of the student.

To change our current predominant practices, the institution must find a way for instructors to be non-contiguously "present" during alternative practices. This may seem to be a problem for assessment. When learning activities occur in one room, instructors can perceive the impact of learning; when they occur outside of the room, that perception is lost. Only with access to valid and extensive evidence of learning for assessment can high impact practices become the norm. It is common for students these days to create Web pages to provide the necessary evidence. But, over a series of courses, those Web pages, including a growing accumulation of dozens or hundreds of links, become hard to integrate or search. Electronic portfolios can and often do address this issue.

Once course-related situated learning experiences become commonly accepted and authenticated by substantial and extensive evidence (by using electronic portfolio technologies), non-course-related learning experiences then also logically become candidates to include in the portfolio. This holistic approach fits with our new world where knowledge technology is in our pockets or purses and we can therefore always get connected and when we now know that learning occurs

constantly, not just in the classroom. Since learning goes on all the time, why limit recognition of that learning to only one category of student learning -- the learning linked directly to a class?

Going further, if students assume more of the agency for their own learning in this time of rapid change, what is the new role of the teacher? One approach is that teachers remain in their traditional role for the "informational" phase of learning in each course (students must start somewhere in each discipline), but they are then faced with re-imagining their role during the "transformational" (high-impact) phase of learning in the course. Transformational does not mean just any kind of change, but a change in the actual *form* of learning. According to Kegan,

> Transformational kinds of learning need to be more clearly distinguished from informational kinds of learning, and each needs to be recognized as valuable in any learning activity, discipline, or field. The *form* that is undergoing transformation needs to be better understood; if there is no form, there is not transformation. At the heart of a form is a way of knowing (what Mezirow calls a 'frame of reference'); thus genuinely transformational learning is always to some extent an epistemological change rather than merely a change in behavioral repertoire or an increase in the quantity or fund of knowledge. Even as the concept of transformational learning needs to be *narrowed* by focusing more explicitly on the epistemological, it needs to be *broadened* to include the whole lifespan; transformational learning is not the province of adulthood or adult education alone. Adult educators with an interest in transformational learning may need a better understanding of their students' current epistemologies so as not to create learning designs that unwittingly presuppose the very capacities in the students their designs might seek to promote (Kegan, 2009).

Informational learning involves the background and methods necessary to get students started on their own work in that field – this phase will seem like traditional classroom practice. *Transformational learning* occurs when students change their form of learning to understand and work with the concepts in the field. It is of special interest to those promoting change that it is first necessary to understand the epistemology (form) the students hold before they can move to a new form. To assume that all students share the same existing epistemology is to slip into the behaviorist doctrine that what is in the head of the student doesn't matter.

If instructors, after having designed a transformational learning sequence based on situated learning, no longer teach toward a test based on what

they teach, why continue tethering teaching and assessment so tightly? At some institutions, a group of 3 or more faculty members (in some cases, a student may be the third member of the team) assesses the portfolios developed in the course. Therefore, in this situated learning construct, for the assessment and evaluation phases, there is no reason the same teacher must be involved. In fact, it could be demonstrated that there is value in un-tethering informational teaching with later assessment and evaluation of transformational learning.

As students mature in the undergraduate years, and in graduate school, they may need less of the informational and more of the transformational. Moving agency to students now that students have the tools to learn *and* collect evidence of learning starts a chain of events that may (and should) add to the pressure to reconsider the entire gestalt of higher education. Reconsider, yes, but towards what end?

In his recent publication, *The Corner Office: Indispensable and Unexpected Lessons from CEOs on How to Lead and Succeed*, Adam Bryant (2011) listed success traits for leaders in today's business world, a list developed through extensive interviews with CEOs over a period of years:

- Passionate Curiosity (not just curiosity, but *needing* to learn);
- Battle-Hardened Confidence (learned and grown from adversity; not just confidence, but *battle-hardened* confidence);
- Team Smarts (finding good people; honoring their work; being reliable; "the ability to recognize the players the team needs and how to bring them together around a common goal");
- A Simple Mind-Set (focus on communicating ideas *simply*, and not on trying to impress); and
- Fearlessness (the ability to be uncomfortable; to push change constantly even when things are going well; being a risk-taker).

Four-year residential undergraduate programs in the U. S., especially those geared toward the liberal arts, have traditionally not claimed to be preparing students for a job but, instead, for life. This ideal has served America well; other countries strive to create the American liberal arts model. And it should still hold true, except that educators must become aware of how "life" has changed in its expectations of graduates. I say this, because the points made by Bryant are echoed in the results of a survey of employers conducted by The Association of American Colleges and Universities a couple of years ago (AAC&U, 2010). In that survey, a majority of employers were not happy with the college graduates they were interviewing or hiring. It's true that a liberal arts curriculum cannot be designed based

on work-place needs. At the same time, a curriculum *can be* designed to produce graduates who are used to having agency and responsibility in their endeavors in keeping with the kinds of work they will probably be doing after graduation.

In the last thirty years, during which time learning theories have expanded in scope and a variety of disciplinary data, technologists, in their parallel universe, have developed theories of how college faculty would "adopt" new technologies. On one side were the theorists and on the other were the "appliers." The question is how can the first inform the second and the second inform the first? Theorists provide the research results to create a new epistemology and technologists understand how to support the new epistemology.

Situated learning brings us back to how humans actually learn and have always learned. But, for centuries, cultural knowledge changed so slowly, we moved away from expecting all learners to repeat the process of starting with experience. Instead, we fell into the habit in higher education of just telling students the results of *others'* efforts to arrive at concepts based on *their* experiences. Those "borrowed" concepts hardened into textbooks and became confused with knowledge itself. It seemed, then, that undergraduate students didn't need to go through the labor of discovering knowledge on their own because it had already been discovered.

Now that knowledge changes infinitely faster and the nature of knowledge itself is different, and now that humanity has committed to digital technologies as the implement for knowledge-making, all has changed. Ironically, only by returning to a more natural way of learning – learning by experience – can we adapt to this new world.

References

AAC&U (2010). *Raising the bar: Employers' views on college learning in the wake of the economic downturn.* Washington, DC: Hart Research Associates. Retrieved from http://www.aacu.org/leap/public_opinion_research.cfm

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32-42.

Bryant, A. (2011). *The corner office: Indispensable and unexpected lessons from CEOs on how to lead and succeed.* New York, NY: Times Books.

Graham, G. (2010). Behaviorism. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy.* Stanford, CA: The Metaphysics Research Lab. Retrieved from http://plato.stanford.edu/archives/fall2010/entries/behaviorism/

Harrison, R., Reeve, F., Hanson, A., & Clarke, J. (Eds.). (2002). *Supporting lifelong learning, volume 1: Perspectives on learning.* New York, NY: Routledge.

Harrison, R., Reeve, F., Hanson, A., & Clarke, J. (2002). Introduction: Perspectives on learning. In R. Harrison, F. Reeve, A. Hanson, & J. Clarke (Eds.), *Supporting lifelong learning, volume 1: Perspectives on learning* (pp. 1-8). New York, NY: Routledge.

Illeris, K. (Ed.). (2009). *Contemporary theories of learning; learning theorists…in their own words.* New York, NY: Routledge.

Kegan, R. (2009). What 'form" transforms? A constructive-developmental approach to transformative learning. In K. Illeris (Ed.), *Contemporary theories of learning: Learning theorists…in their own words* (pp. 29-46). New York, NY: Routledge.

Kearsley, G. (2011). Situated learning (J. Lave). *Explorations in teaching & learning: The theory into practice database.* Retrieved from http://tip.psychology.org/lave.html

Kuh, G. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter.* Washington, DC: AAC&U.

Lave, J. (2009). The practice of learning. In K. Illeris (Ed.), *Contemporary theories of learning: Learning theorists…in their own words* (pp. 200-208). New York, NY: Routledge.

Lave, J., & Wenger, E. (2002). Legitimate peripheral participation in communities of practice. In R. Harrison, F. Reeve, A. Hanson, & J. Clarke (Eds.), *Supporting lifelong learning, volume 1: Perspectives on learning* (pp. 111-126). New York, NY: Routledge.

Rogers, C. R. (2002). The interpersonal relationship in the facilitation of learning. In R. Harrison, F. Reeve, A. Hanson, & J. Clarke (Eds.), *Supporting lifelong learning, volume 1: Perspectives on learning* (pp. 25-39). New York, NY: Routledge.

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From Personal to Social and Back Again: A Review of Darren Cambridge's *Eportfolios for Lifelong Learning and Assessment* (Jossey-Bass, 2010)

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This article contains a review of Darren Cambridge's *Eportfolios for Lifelong Learning and Assessment.* This book sees a major potential in ePortfolios for articulating a distinctive and integrated identity for their authors while simultaneously involving those authors in the conversations that characterize institutions and social networks. Cambridge reviews the philosophical as well as the technological questions that ePortfolios raise, grounding the analysis within the needs of assessment and student learning. Publisher: Jossey-Bass (San Francisco, 2010). ISBN-10: 0470503769. List price: $38.00. 288 pages.

ePortfolio initiatives in higher education frequently run up against formidable barriers: too few of our instructors see a place or function for ePortfolios in their courses, or too many of our students need too much class time to master the technology. Exactly the right tool hasn't been developed yet, or else it would cost our institution – or our students – too much money. Maybe it works well for some of our academic programs but not others. The simpler ePortfolio systems restrict the expressiveness and individuality of our more technologically creative students, and with the technology changing so rapidly, the system that we adopt this year might be overtaken by a superior system in another year or two. The commercial system that we like would require us to house the data outside our institution, vulnerable to the backup plans of that company and impossible to integrate with our in-house database. We don't have the resources to build our own ePortfolio, let alone maintain it once it's in place. Training our assessment teams and then assessing the ePortfolios would take up more of our time than we can give. Even if we could conduct such assessment, we end up with data that isn't comparable across institutions. And all the while, external demands for accountability keep shouldering us away from the touchy-feely, reflection stuff and over towards standardized tests and "academic rigor."

What wonder, then, that many initiatives opt for partial solutions, a pilot in an Honors program here or an implementation strategy built upon one-time grant money there. At a more theoretical and conceptual level, commentators such as Helen Barrett have simplified the landscape by suggesting different ePortfolios for different purposes. On the one hand, we should develop personalized ePortfolios – "portfolio as story" – and on the separate, other hand, to address assessment needs, we should develop standardized ePortfolios – "portfolio as test" (Barrett & Carney, 2005; Barrett & Wilkerson, 2004).

In his 2010 study *Eportfolios for Lifelong Learning and Assessment*, Darren Cambridge considers such attempts to simplify ePortfolios and rejects them – pretty convincingly – as partial solutions that would ultimately leave ePortfolios on the vague and uncertain margins of higher education. While Cambridge agrees that the personalized and the standardized models are "in tension," he argues for the importance of combining and synthesizing both within a single ePortfolio, one that would resolve this tension through "the cultural ideal of authenticity" (pp. 18-20).

This tension and dichotomy provide Cambridge with a useful structuring device for much of his analysis. In the personalized portfolio, he suggests, the author establishes ownership of her work and her learning; the process of reflection creates a self-authorship crucial to the authenticity reflected in the portfolio. Cambridge goes on to argue, however, that keeping the more rules-based standardized portfolio separate from the personalized "distorts both" (p. 36) by disrupting the valuable dialogue that can help to inform institutional and curricular development through attention to personalized learning.

A focus on the personalized portfolio tends to find value in the author's sense of audience: the author can share the portfolio with others of a similar set of values and interests, almost like a social network. Cambridge also emphasizes audience, although more with an eye to the professional network and the ePortfolio's ability to demonstrate its author's professional competence and integrity across a variety of public roles, some of them personal and others more career oriented. He sums up: "Authors craft their eportfolios in such a way that they accommodate varied kinds of evidence that meet the needs of different readers and capture diverse experiences" (p. 143).

Cambridge sees a major potential in ePortfolios to guide learners in making choices – and making sense of their learning – over the course of a lifelong development that might bridge many different institutions, jobs, or even career paths. In describing the support that ePortfolios might provide to lifelong learning, he summarizes this process as "articulating a distinctive,

integrated identity grounded in evidence of learning and performance and using that self-representation to participate in institutions and social networks" (p. 223). Relying on the philosophical work of commentators such as Charles Taylor, Cambridge argues that the cultural ideals of authenticity and integrity can be combined in portfolios in ways that enrich both the culture and the individual. Even the word "eportfolio" for Cambridge lacks the common hyphenated break of e-portfolio or the mid-word, upper-case bump of ePortfolio.

The kind of integrated portfolio model explored in this book rests upon some of Cambridge's earlier work with the concepts of the "symphonic" and the "networked" selves (2008). It's not all seamless for Cambridge, then, as in his clarifying distinction suggested by these separate concepts. In the case of a symphonic ePortfolio, the author will need to invest considerable time in the project via extended reflection (or "deliberation") in order to realize the developmental insights and benefits. A networked ePortfolio, by comparison, is more immediate and might be exemplified by a blog rather than a layered and carefully planned ePortfolio. Cambridge argues that the ideal ePortfolio blends both of these approaches, gaining immediacy and energy from day-to-day experience but also gathering together a set of materials that can later be refashioned into the more coherent – "symphonic" – narrative that might have more enduring value to the individual, well beyond the walls and experiences of academe. The "lifelong" in his title really does mean "for your whole life."

Cambridge has a broad range of experience as a foundation for this book, such as his involvement in the eFolio Minnesota project, which provided ePortfolio capability to all residents in Minnesota; his stay at New Century College at George Mason University; or his work with EPAC, Sakai, and the IMS Global Learning Consortium. He benefits, as well, from a rich array of projects fostered and collected over several years now within the Inter/National Coalition for Electronic Portfolio Research (I/NCEPR), and I should mention a disclaimer here: as part of the University of Cincinnati team, I participated in Cohort V of the I/NCEPR initiative, where I grappled particularly with the issues of assessment that ePortfolios raise for higher education.

Cambridge's book helps a great deal with such frustrations, as when he points the way towards the kinds of assessment strategies that institutions would ideally implement in order to benefit most from the learning exhibited in student portfolios. While it is easy to highlight the limitations of standardized tests, Cambridge also tackles the more complex problems raised when an institution might build an assessment strategy around portfolios, pointing to such developments as the AAC&U's Valid Assessment of

Learning in Undergraduate Education (VALUE) project.

I wish that Cambridge had given time to some of the related pedagogy initiatives that have taken shape over the past dozen years, such as the Visible Knowledge Project that Randy Bass has helped to develop towards making the results of teaching and learning more public (Hatch, 2004). More significant: John Zubizarreta's valuable concept of the "learning portfolio," first articulated in a 2004 study, doesn't get mentioned here. The fact that Zubizarreta then reissued this book in a second edition in 2009 underscores the valuable and far-reaching role it has played in those pedagogy discussions with faculty for whom "e" anything means "one more damned thing." Although for Zubizarreta, the learning portfolio doesn't require the format of an ePortfolio, Cambridge does make a strong case for the importance of the "e" within the whole process. Pointing to lessons learned from the eFolio Minnesota experience, he notes that the software provides not just a flexible structure but also the ability readily to share one's ePortfolio with others and get the kind of feedback necessary for a dialogic process.

Cambridge's book also represents a sharp contrast to another work appearing just a few months earlier in the same year, the AAC&U publication *Electronic Portfolios and Student Success* by Helen L. Chen and Tracy Penny Light (2010). While the Jossey-Bass format will appeal to the traditionalists in all of us, the AAC&U publication offers much greater focus and efficiency, more elegantly styled for the twenty-first century, more a handbook to take into the pedagogy workshop and the committee meeting than a scholarly treatise to review in the library.

Amidst such considerations of terminology and visual appeal, however, Cambridge's study delivers its greatest value at the level of the conceptual and the philosophical rather than the technical, not so much a "how to" as a "why to." The "Questions for Practice" sections with which he ends each chapter seek not so much to address the kinds of down-in-the-trenches problems with which I began this review as to guide readers towards their own more holistic approach to ePortfolios and the desired role for ePortfolios within the comprehensive structures shaping higher education.

Within his own focus, moreover, Cambridge ultimately lays out an agenda that is strikingly visionary and forward-looking, with his concluding chapter pressing for several key changes that he sees as necessary if higher education is to support lifelong learning beyond the lip-service phrases within institutional mission statements. In his terms, we might envision this as a dialogue between an institution and its students about teaching and learning, via multiple, distributed, and integrated technologies, and with the larger goal of "cultivating learning throughout the

society" (p. 224). Cambridge sees many hopeful signs of such developments becoming increasingly more substantial within higher education, as with the growing importance of the scholarship of teaching and learning, the open-source impetus to make course materials freely available online, or the increased attention to engaged research and teaching. In his view, higher education needs to do even more in these directions to help individuals in the wider society to articulate their identities in more meaningful ways. For Cambridge, ePortfolios can play a key role in helping that articulation to happen. In reading his book, you gain the hopeful vision that such integrating and unifying changes might indeed just be possible.

References

Barrett, H., & Carney, J. (2005). *Conflicting paradigms and competing purposes in electronic portfolio development.* Retrieved from http://electronic portfolios.com/portfolios/LEAJournal-BarrettCarney.pdf

Barrett, H., & Wilkerson, J. (2004). *Conflicting paradigms in electronic portfolio approaches.* Retrieved from http://electronicportfolios.org/ systems/paradigms.html

Cambridge, D. (2010). *Eportfolios for lifelong learning and assessment.* San Francisco, CA: Jossey-Bass.

Cambridge, D. (2008). Layering networked and symphonic selves: A critical role for eportfolios in employability through integrative learning. *Campus-Wide Information Systems, 25*(4), 244-262.

Chen, H. L., & Light, T. P. (2010). *Electronic portfolios and student success: Effectiveness, efficiency, and learning.* Washington, DC: Association of American Colleges and Universities.

Hatch, T., Bass, R., Iiyoshi, T., & Mace, D. P. (2004). Building knowledge for teaching and learning: The promise of scholarship in a networked environment. *Change: The Magazine of Higher Learning, 36*(5), 42-49.

Zubizarreta, J. (2009). *The learning portfolio: Reflective practice for improving student learning* (2nd ed.). San Francisco, CA: Jossey-Bass.

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