FIELD GUIDE TO
Eportfolio

Why It Matters for Learning

The Promise of Eportfolios

Redesigning Learning for Reflective Growth

Authentic Learning: Across the Divide

Promoting Student Cognitive Development

Learners and the Digital Era

On the Right Track

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How Important Is the Technology?

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Field Guide to Eportfolio

A Collaborative of the

Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL);

the Association of American Colleges and Universities (AAC&U);

the International Journal of ePortfolio (IJeP); and

Electronic Portfolio Action and Communication (EPAC) Community of Practice

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Foreword

It is with great pleasure that the Association of American Colleges and Universities (AAC&U) joins our sister organizations, the Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL); the International Journal of ePortfolio (IJeP); and the Electronic Portfolio Action and Communication (EPAC) Community of Practice in producing and publishing the *Field Guide to Eportfolio*. As reader, you will engage in a path-breaking encounter with an emerging digital ecosystem and the changing nature of knowledge creation and learning.

The eportfolio, a ubiquitous medium available to students and educators, is designed to collect student work to demonstrate learning across the outcomes valued by employers.

As the leading post-secondary association representing all sectors of higher education, including over 1,400 college and university member institutions focused on enhancing undergraduate education for all students, AAC&U brings theory, principles, research, and practice together to advance engaged undergraduate learning. AAC&U's focus and commitment to liberal learning and inclusive excellence for more than one hundred years is currently represented in our Liberal Education and America's Promise (LEAP) initiative. LEAP champions the importance of a twenty-first-century liberal education for individual students and for a nation dependent on economic creativity and democratic vitality. The LEAP Challenge is the most recent component of the initiative. The LEAP Challenge

> "invites colleges and universities to make signature work a goal for all students—and the expected standard of quality learning in college. . . . A student uses his or her cumulative learning to pursue a significant project. . . . Through signature work, students immerse themselves in exploration, choosing the questions they want to study and preparing to explain the significance of their work to others. The process helps students develop the capacities, e.g., investigation, evidence-based reasoning, and the ability to collaborate constructively, to grapple with problems where the "right answer" is still unknown, and where any answer may be actively contested." (AAC&U 2015)

The LEAP Challenge invites students, educators, and others to make integration of learning into a collaborative process through encouraging student agency and faculty mentorship to create meaning and sense-making out of students' formal education, cocurriculum, and lives beyond the academy.

The *Field Guide to Eportfolio* is the initial embodiment of the research, theory, and practice of learning in the context of eportfolio. Fifty-three eportfolio community practitioners from around the world—leaders in the many facets of eportfolio utilization—collaborated to identify key components defining the field of eportfolios for learning and student success. For each of the chapters, teams of eportfolio community members collaborated through digital working groups to lay out prevailing practice and theory based on research, including links to resources and case studies. Both the executive editor of the *Field Guide* and coeditor are AAEEBL eportfolio community members who managed the process of finalizing the guide.

AAC&U has long recognized the value of eportfolios for supporting the affirmation of student voice and identity for all students, especially those who may not traditionally see themselves as belonging in the academy or contributing to the educational community as valued partners.

Eportfolios are also situated to encourage students and faculty to demonstrate learning through actual work that takes formal knowledge acquisition and applies it to real problems and issues, either by individuals or by collaborations of multiple learners.

The *Field Guide to Eportfolio* is a community-sourced, peer-reviewed, global, and digital effort to define a field of professional practice. The guide is envisioned to be regularly updated and curated by the community of practice as the field and the digital ecology evolves. We invite readers to join us in our endeavor to create and advance this learning space in support of lifelong inquiry, evidence-based liberal learning, and equity in student success.

Terrel L. Rhodes

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Acknowledgments

The Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL), and especially the AAEEBL Board of Directors, comprises many of the "movers and shakers" from the community of eportfolio practitioners and researchers, a generous and collaborative group. This guide to the eportfolio field is a singular instance of the cooperative and collaborative synergies that AAEEBL inspires. In collaboration with AAC&U, IJeP, and EPAC, we have been able to capture and harness stories from the field to collect, share, record, and archive current efforts that contribute to an emerging global field of eportfolio professional practice for learning, teaching, and research.

The review of research and practice evident in the *Field Guide to Eportfolio* represents the culmination of friendships; partnerships; and a collaborative, participatory community of academic and professional colleagues with shared ideologies, pedagogies, and educational philosophies in which learning and the learner are always at the center.

We thank the AAEEBL Board of Directors who trusted our ability to compile the *Field Guide* and AAEEBL Founder Trent Batson for his vision and steady leadership. We recognize all the contributors and thank them for sharing their stories, for their ongoing and developing practice, and for their willing participation in the development of a curated publication that we hope does their continued praxis justice. We also share our gratitude and thanks to Barbara J. Ramirez, Clemson University—who provided an additional level of peer review to the *Field Guide*—for her professionalism, expertise, and commitment. We also acknowledge the many hours of design and editorial contributions of AAC&U's editorial and publications staff—including Shelley Johnson Carey and Michele Stinson—for preparing the final manuscript.

Lastly, we thank Judy Williamson Batson, who was present at the start of these conversations a few years ago when we deliberated on the most effective way to capture this topic as we gazed out into a burgeoning and developing field of practitioners keen to explore the potential and power of eportfolios at their institutions.

Kathryn S. Coleman
Andrew Harver

Introduction to the *Field Guide to Eportfolio*

Trent Batson, C. Edward Watson, Helen L. Chen, and Terrel L. Rhodes

Overview and Process

The *Field Guide to Eportfolio*, a publication produced by more than fifty members of the eportfolio field, provides an authoritative and representative account of the eportfolio idea. It combines entries on what we think are the most important dimensions of the eportfolio concept in the United States with case studies from other countries serving as examples of many of those dimensions. This publication intends to be both an authoritative guide for how to understand eportfolio in the context of higher education as well as an attempt to break new ground.

The *Field Guide* can be considered authoritative for these four key reasons:

1. It has been assembled by the Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL), which is based in the United States and serves as a leading professional association in the global eportfolio field.
2. The *Field Guide* is a culmination of thinking about the portfolio/eportfolio concept over the past four decades.
3. The authors who contributed to this book represent the most current thinking about eportfolios.
4. The *Field Guide* is cosponsored by leading groups of eportfolio practitioners and scholars in the field: Association of American Colleges and Universities (AAC&U), *International Journal of ePortfolio* (IJeP), and Eportfolio Action and Communication (EPAC) Community of Practice.

This book is also a landmark as it is a digital publication and is published as a combination of PDF and website formats. Readers can expect frequent updates as capabilities, opportunities, and pedagogies advance. Such innovative attributes also offer daunting coordination challenges. While the authors of this book can't claim the book was crowdsourced, we do assert it was produced in the spirit of crowdsourcing. The *Field Guide* was created within digital spaces, draws on contributions from a global community, and is envisioned to reside in a coordinated set of digital locations.

This guide is a product of a team of scholars from around the world, and executive editor Kathryn Coleman described the process that led to this volume in a July 9, 2016 email:

> The *Field Guide* is as much about professional learning in the AAEEBL community as it is about building a product for other learning communities. I witnessed two emerging capabilities in our community. The first was digital thinking, digital writing, and digital collaborative writing. Each chapter was developed in a digital collaborative document where people could contribute and collaborate, growing out of a digital board in Trello (a project management online application). The digital fluency and digital literacies were developing iteratively. Some authors were not digitally literate but the team structures supported these shifts in practice.

The other capability was indeed working in teams. I think this is a great example of a digital authentic learning task—one that we often ask our students to be able to do without much scaffolding, modeling, or embodied practice. Some teams developed a hierarchical leadership style where one person took on the role to be the heavy lifter while other teams worked in flat structures. Some were unsuccessful and some colleagues just disappeared. As we hear our students groan about!

For me, editing and project managing was a little difficult when teams worked in such varied ways but I think what makes the *Field Guide* and chapters so unique is the way that each team developed a product, a collaborative digital artifact developed and written in such varied styles using very different processes and journeys to get to the same point— digital learning! I saw digital portfolio pedagogy in action.

In truth, the *Field Guide* is an exemplar of how academic publishing will evolve as higher education continues to adapt to digital technologies.

Eportfolio Adoption

At the time of the *Field Guide's* release, around one-third of US undergraduate students report using eportfolios in at least one class (Dahlstrom et al. 2015). Correspondingly, more than one-third of faculty agree that eportfolios could help them become more effective instructors if they had better skills at integrating them into their courses (Brooks 2015). Higher education institutions are evolving in ways that support the eportfolio idea. Faculty, other educational professionals, and institutional leaders are helping to adopt ways to meet the desire for students to own their own learning and to develop their own agency and identity as they follow more individualized paths to learning outcomes proficiency. These changes are especially helpful for non-traditional students who have different needs compared to traditional college students.

Additionally, institutions are pursuing authentic, experiential learning opportunities that often happen outside of the traditional classroom, such as participating in internships, undergraduate research, study abroad, and service learning. These high-impact practices can result in a more episodic overall curriculum. However, when done well, coupling eportfolios with such powerful instructional opportunities can assist students as they construct a meaningful whole out of diverse educational experiences. Indeed, the growing utilization of eportfolios and the research on enhanced learning that can result from eportfolio usage have resulted in George D. Kuh, founding director of the widely used National Survey for Student Engagement, declaring eportfolios as the eleventh high-impact practice (Eynon and Gambino 2017).

In AAC&U's recent LEAP Challenge, colleges and universities were invited "to make signature work a goal for *all* students—and the expected standard of quality learning in college" (AAC&U 2015). Signature work is integrative, encourages student agency and independence, and addresses unscripted problems and questions that are important to our society. Eportfolios offer a high-impact meta-practice that fosters and enables these various forms of signature work (Hubert and Pickavance 2015). Moreover, responding to these trends in higher education, the eportfolio industry sector is robust and continues to evolve. We can safely say eportfolio technology is here to stay for the foreseeable future because it has been used to support and enable so many new ways to learn, assess, advise, and build careers.

Why Does Eportfolio Matter for Learning?

Why did so many people want to contribute to this publication? What is it about eportfolio technology that so energizes academics? One indicator to help understand emergent learning ecosystems in higher education is the aforementioned high-impact educational practices that in the last ten years have so permeated higher education thinking. As we examine each of those practices, we find common threads among them that suggest that learning is *social* (Vygotsky 1978), learning is best energized by *authentic contexts*, and specific learning designs are necessary to *integrate disparate contextualized learning* and to generalize from those experiences.

Each original high-impact practice—first-year seminars, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments, undergraduate research, diversity and global learning, service learning/community-based learning, internships, and capstone courses and projects—is conceptually related to situated cognition and the findings of that research community. Even though this analysis of situated cognition is not featured in this book, the eportfolio community and the situated cognition community have developed over the past thirty-five years or so in parallel, unwittingly mirroring each other's thinking. The eportfolio community was developing a way, based in a technology, for situated cognition to be recognized and used to guide educational design but was often unaware it was doing so.

The situated cognition community—based in anthropology, cognitive science, and discourse analysis—gathered evidence to show that learning actually occurs in a context and the more authentic that context, the more the learning sticks. The high-impact educational practices, also developed in parallel with eportfolio theory and situated cognition theory, are highly compatible with thinking in these other research communities. (And now, the eportfolio has been added as the eleventh high-impact practice.) *The Field Guide* reveals the many ways eportfolio technology is being used in higher education worldwide and shows how eportfolio theory has been applied productively in many contexts. The guide also conveys how, although without intentional coordination, eportfolio use supports contextualized learning, or situated cognition.

Contextualized learning is a key issue for educators. If, as Bereiter (1997) suggests, humans learn in a context—social, cultural, or practical—responding to the needs of a situation, then how do we help students learn how to find meaning in that situated learning and transfer that learning to new and different contexts? Learners who do look for meaning in a situation, Bereiter tells us, are "intentional learners" and are able to transfer knowledge from one context to another. How do educators develop that drive to find meaning in a situation?

The eportfolio community would answer by saying students can start the process by collecting artifacts from that situation and other similar situations and then examining them over time; finding meaning or similarities in these artifacts; and, through reflective analysis and synthesis, making sense or meaning from experiences beyond the individual, situated activities.

The claim is that all learning is situated; there is no escaping that. Presenting knowledge that is out of context, as in a lecture about abstract concepts, runs against the way that humans, especially novice learners, learn. The high-impact educational practices, instead, embrace authentic contexts and accept—implicitly—that learning is situated.

The ability of eportfolio technology to add a longitudinal dimension to learning—revisiting artifacts over weeks or months or years—invites learners to see connections among their learning

situations and to therefore see patterns and find meaning (Batson 2011). Eportfolio technology, when guided by the underlying concepts of high-impact practices (or in support of high-impact practices), and when built upon relevant learning theory and educational research, can energize or catalyze students' emerging learning ecology. This book can guide practitioners in how to do eportfolios well to obtain results of deep, reflective, and integrated learning.

The Eportfolio Idea

Ultimately, eportfolio is not a thing but an idea. It has often been defined by the technology that puts the idea into practice, but that definition has been a minimalist and misleading way to delimit "eportfolio." This publication instead focuses on the eportfolio *idea,* a focus that helps explain why a community of practice and a scholarly field have emerged around eportfolios, why it is now recognized as a high-impact practice, and why eportfolio technologies are being so widely adopted.

This book and the websites that provide much of the content of this book have been created by a large team of authors who are members of the eportfolio community of practice and research field. It represents an authentic collaboration among AAEEBL, AAC&U, IJeP, and EPAC. It was conceived and ultimately produced because of the power of the eportfolio idea and because we believe the eportfolio idea is the conceptual framework that can guide the ongoing transformation of higher education for the foreseeable future.

Overview of the *Field Guide*

Fundamental eportfolio principles are developed, reoccur, and are subsequently reinforced from multiple perspectives throughout the *Field Guide,* which will be evident to both the novice and expert reader. Buyarski and colleagues introduce the development and value of intentional learning, knowledge construction, and student agency in Chapter 1. In Chapter 2, Matthews-DeNatale and colleagues argue that success with eportfolios is highly dependent on the planning and implementation of three interrelated design principles (inquiry, reflection, and integration) that must be shaped at the program level, the institutional level, and beyond. Brown and Thoroughman pursue how eportfolios enable authentic learning—which encompasses the "integration of personal identity, intellectual agency, and real-world connection"—in Chapter 3.

In Chapter 4, Veneruso and colleagues illustrate how eportfolios directly address the otherwise fragmented undergraduate experience through demonstrations of learning across a range of contexts and experiences, hallmarks of successful students and advanced metacognitive and critical thinking skills. Andrus and colleagues in Chapter 5 not only reinforce the metacognitive growth opportunities implicit in eportfolio curation but also the growth of digital literacies as students "negotiate multimodal artifacts" in the creation of eportfolios.

Eportfolios are intended for multiple purposes and with multiple audiences in mind. The complexity of purposes and audiences is raised by Penny Light and colleagues in Chapter 6, characterizing the effectiveness of eportfolios for not only documenting skills desired by employers (e.g., effective communication, problem-solving, and team work) but also meeting accountability expectations of families, accreditors, and policy makers. Hickey and colleagues describe the ways in which eportfolios afford innovations in academic credentialing—through digital badges and extended transcripts—in Chapter 7. The "outward-facing" capacity of eportfolios for demonstrating career learning and employability are further developed in

Chapter 8 by Ambrose and colleagues who offer a model of key elements using eportfolio pedagogy that underpin career development: stakeholders, work-integrated learning, branding, and professionalism. Eportfolios can be mined not only for evidence of academic achievement and career readiness but also student learning behaviors. In Chapter 9, Ellen Caldwell and colleagues present the topic of learning analytics—the "practice of collecting data, discerning trends, and predicting students' progress as learners" as they engage in the creation and revision of eportfolios across time and context.

Faculty are uniformly familiar with the process of generating portfolios to document competency in the areas of teaching, research, and service for purposes of reappointment, promotion, and tenure. Heather Caldwell and colleagues in Chapter 10 envision that faculty eportfolios afford a distinctive "instructor-owned" digital learning space to reflect—as faculty ask of students in turn—on our teaching practices and on the authenticity of our assignments. Accordingly, faculty eportfolios not only provide a mechanism for enhancing professional growth and development but also for creating alongside our students a shared "culture of learning and reflection." Digital technologies have accelerated global communication (e.g., the Arab Spring) and eportfolios enhance global reflection and globally focused experiential learning. In Chapter 11, Jones and colleagues outline the potential of eportfolios for "the enhancement of global learning, career integration, and campus internationalization." We argued earlier in the introduction that eportfolios have often been viewed through the technology that puts the idea into practice rather than the *idea* of an eportfolio. Nonetheless, choosing an appropriate technology for eportfolio work is among the first decisions, and Benander and colleagues in the final chapter observe that technology choices are influenced by both "top-down" and "bottom-up" decision processes.

We hope the reader finds, as we have, that the *Field Guide to Eportfolio* offers a lens—in its tone, rigor, and utility—though which to view "a burgeoning and developing field of practitioners keen to explore the potential and power of eportfolios at their institutions."

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1. The Promise of Eportfolios for Student Learning and Agency

Catherine Buyarski, Susan Oaks, Candyce Reynolds, and Terrel L. Rhodes

Eportfolios offer a space for students and faculty to cocreate meaningful learning experiences through active and collaborative engagement to make meaning of a student's lived, experienced, and delivered learning. Eportfolios allow faculty to provide intentional guidance for students in their development and integration of their identities as educated persons. Eportfolios are a dynamic medium for revealing the social construction of knowledge and learning through reflective practice and active involvement in the expansion of a student's own voice and agency as a contributor to the broader society in which they live. Eportfolios are spaces for learning, for pedagogy, and for knowledge construction and self-direction.

Keywords: learning goals, eportfolio pedagogy, knowledge construction, connectivism

Eportfolios as a Tool for Achieving Institutional and Student Learning Goals

As today's universities strive to provide students with opportunities both in and out of the classroom that lead to the development of the cognitive and affective skills needed for success in the twenty-first century, institutional leaders can turn to a plethora of educational innovations designed to enhance student learning and success. None will (or should) provide a quick fix for educating our students. And, any such search should focus squarely on the students and their learning. The adoption of any educational innovation or approach should turn on core learning outcomes such as critical and creative thinking, intercultural knowledge and understanding, ethical reasoning, problem-solving, and analytic reasoning.

As institutions have diligently tried to create learning environments and structures that facilitate student learning, faculty have often found themselves with silos, in which communication skills are developed in writing courses, problem-solving in capstones, and inquiry-based reasoning in the sciences. They can check the learning outcome "boxes," but the integration of these skills needed for life and the workplace is short-changed. Further, the critical aspect of metacognition is missing.

Today, eportfolios are becoming more common in education mainly for the opportunities they provide for promoting and assessing student learning (e.g., Stefani, Mason, and Pegler 2007; Chen, Penny Light, and Ittelson 2012). Through eportfolios, students have the opportunity to discover and explore their role as a learner, make connections, and more intentionally integrate their learning. For administrators, eportfolios provide a more authentic way of evaluating student learning and program success.

Paper portfolios have been used for quite some time in education, particularly in such areas as writing, visual arts, architecture, and graphic design. Beginning in the mid-1990s, the use of portfolios went beyond these disciplines to address pressures by outside constituents to demonstrate the value of students' education and to create a more learner-centered environment. This was coupled with the desire to promote more active teaching strategies and deepen student

learning. These portfolios transitioned from hard copy to digital as technology progressed, and it has been noted that eportfolios go beyond the capability of hard-copy portfolios in several areas.

The digital format allows eportfolios to be collaborative rather than individual. They develop students' critical thinking, create opportunities for student reflection and integrative learning, and allow students to demonstrate learning through multiple modes—visual, oral, written, and video. As Reynolds and Patton (2014, 12) state, "Eportfolios are digital representations of students' work and accomplishments along with their reflections on learning. The eportfolio has the potential to enhance student learning through the process of collect, select, reflect, and share."

Perhaps the strongest endorsement for the use of eportfolios is the current realization that, in this rapidly changing world, higher education needs to produce graduates who are self-directed learners and autonomous thinkers. Current research by Bransford, Brown, and Cocking (1999); Halpern and Hakel (2000); Tagg (2004); and Zull (2002) all support teaching with the goal of developing life-long learners with the ability to apply that learning. In order to do this, Chickering and Gamson (1987, 4) stated that students "must talk about what they are learning, write about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn a part of themselves." Eportfolios provide the perfect vehicle to accomplish these goals.

The promise of eportfolios is great. However, as the means to create eportfolios become more available and accessible, it threatens to make the process too easy. Instead of providing enriched opportunities for students to learn and for program coordinators to use them for assessment, eportfolios can become no more than electronic repositories of information, especially if the attention is mostly on creating easy-to-assess eportfolios. In these cases, students only need to take a few minutes to download some assignments, write a short reflection, and add a picture or two, with no significant learning involved. However, eportfolios can meet the goal of advancing and documenting student learning well *if* instructors embrace sound pedagogical methods for maximizing their effectiveness.

Eportfolio Pedagogy

Eportfolios offer the much-needed pedagogy, space, and platform for facilitating the integration of what Yancey (2004) characterized as the delivered curriculum (i.e., the one we design and evident, for example, in course goals and assignments); the lived curriculum (i.e., prior courses and experiences that contextualize the delivered curriculum); and the experienced curriculum (i.e., the construction of the delivered curriculum by the students themselves). Reflective practice becomes apparent at the center of this instructional framework (see Figure 1).

Figure 1. Yancey's Multiple Curricula of Higher Education
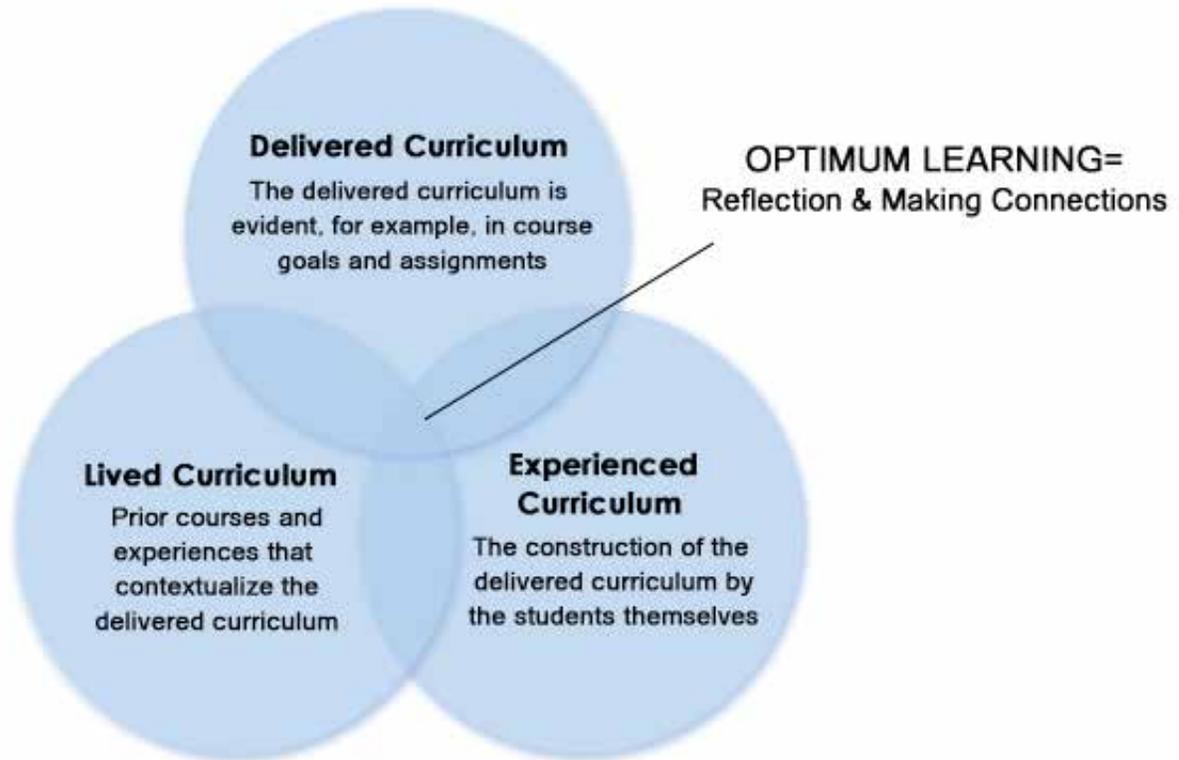
(Used with permission of the author © Kathleen B. Yancey 2004.)

By placing eportfolios at the center of the college experience, educators can create an intentional and structured way not only to allow students to make connections and develop meaning around what they are learning and experiencing but also to engage in a "self-reflective, metacognitive appraisal of how and, more importantly, why learning has occurred" (Zubizarreta 2004, 4). Students are able to construct a view of their learning that is integrated, personal, and relevant to their lives.

It is clear that reflection is at the center of eportfolio pedagogy. Reflection allows students to build bridges between prior and current learning, across semesters and among courses and disciplines. It allows for the construction and understanding of knowledge within personalized contexts to make the curriculum come alive with meaning for each student. In this way, eportfolios provide a structured institutional framework that creates reflective experiences that promote integrated learning and the construction of meaning across the curriculum.

More specifically, eportfolios allow for the development of a wider range of learner habits and skills as described by Labissiere and Reynolds (2004, 2–3):

An eportfolio requires the development of several skill sets, each of which enhances the student's ability to engage more deeply with what has already been learned. For example,

hyperlinking, which is the primary activity of building a website, forces students to make new connections with what has previously been learned. Such hyperlinking practices, we argue, encourage metacognitive skills development.

Labissiere and Reynolds go on to discuss opportunities for students to rework material for different audiences, thereby constructing and communicating understanding of knowledge in differing frames (Bass 2014). Further, the eportfolio goes with the student as she learns in and out of the classroom, beyond our physical campus, and across educational milestones. As students develop, so does their eportfolio. The eportfolio becomes a living reflection of the student and her educational journey. More important, the digital nature of the eportfolio allows reflection—which has been traditionally conceptualized as a private and solitary venture—to move into the social environments of learning. This type of social pedagogy promotes collaborative work, meaningful peer and faculty feedback, and knowledge communities (Bass 2014). Eportfolios, therefore, allow for the creation of communities of learners that lead to deeper and more meaningful learning.

Eportfolios and the Construction of Knowledge

Eportfolios offer the opportunity for authentic, real-world learning, which encapsulates key components of knowledge construction. Authentic learning, according to Lombardi (2007, 3), focuses on the following characteristics:

- Real-world relevance: "work actively with abstract concepts, facts, and formulae inside a realistic—and highly social—context."
- Ill-defined problem: "open to multiple interpretations."
- Sustained investigation: "complex tasks . . . investigated . . . over a sustained period of time."
- Multiple sources and perspectives: "a variety of theoretical and practical perspectives, using a variety of resources."
- Collaboration: "integral to the task."
- Reflection: learners "make choices and reflect on their learning."
- Interdisciplinary perspective: "adopt diverse roles and think in interdisciplinary terms."
- Integrated assessment: "woven seamlessly into the major task."

These characteristics apply and realize aspects of knowledge construction included in multiple learning theories and descriptions. Dewey's (1938) and others' constructivist theories focus on the learner constructing knowledge by linking new knowledge to existing knowledge via collaboration among learners and instructors (e.g., sustained investigation, multiple perspectives, and collaboration). Siemens and Downes' connectivist theories (2005) focus on the learner constructing knowledge, which is ever-changing, through a continual process of accessing, evaluating, connecting, and adding to digital information, thus contributing to both personal and wider organizational knowledge networks that continually feed into one another (e.g., real-world relevance, ill-defined problem, sustained investigation, multiple perspectives, collaboration, and interdisciplinary perspective).

In both constructivist and connectivist theories, as in the description of authentic learning above, key components of learning through knowledge construction include the opportunities to

- identify what is to be learned;
- create one's own learning path;
- access a variety of resources, including text, experts, and co-learners;
- create artifacts to identify or add to learning; and
- reflect on both the content and process of learning, leading to further learning.

Eportfolios support all of these components. Zubizarretta (2008, 1) states that no matter what format a learning portfolio takes, there are "three fundamental components: (1) reflection, (2) documentation, (3) collaboration."

Reflection underlies all aspects of knowledge construction, with the learner considering multiple perspectives and sources of information, relating them to the purpose of the investigation, evaluating and selecting information, and reconsidering his or her own understanding. In *Reflection, Integration, and ePortfolio Pedagogy* (2014), Eynon, Gambino, and Török discuss Dewey's and Rodger's understanding of reflection, identifying four types of reflection that eportfolios can support: (1) reflection as connection, which focuses on integrating knowledge; (2) reflection as systematic and disciplined, which focuses on moving from description to more complex and sophisticated types of thought; (3) reflection as social pedagogy, which focuses on reflection done via discussion with others; and (4) reflection as an attitude toward change, which focuses on awareness of one's growth in knowledge and attitude. They explain in depth, using detailed examples, how specific eportfolio practices can foster the various types of reflection, leading to the construction of knowledge.

Also inherent in these theories is the concept that the *process* of knowledge construction is as important as the knowledge gained. Anderson and Dron (2012), writing about connectivist technologies (which include eportfolios), state that "individuals and groups are helped to create and continuously augment, adapt, and use a personal learning environment." Chen and Penny Light (2010, 3) state that "eportfolios—as both process and product—can promote deep learning and knowledge transfer by fostering the student's ability to make connections between his or her learning experiences in a variety of classroom, workplace, and community settings."

Eportfolios, on a basic level, offer a space for students to design and capture their ideas informally; express their ideas more formally; collaborate with others in the processes of creation, receiving feedback; collect various iterations plus the final results of work; consider the process and outcomes in terms of what they learned; and see links among the pieces. Eportfolios support the collaborative, relevant, reflective, integrative, and multiple-perspective aspects of authentic learning.

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2. Redesigning Learning: Eportfolios in Support of Reflective Growth within Individuals and Organizations

Gail Matthews-DeNatale, Samantha J. Blevins-Bohanan, Constance G. Rothwell, and Catherine M. Wehlburg

Those who are new to eportfolios tend to focus on the technology, asking such questions as "What software should we use?" and "How will we handle the technology training?" These considerations matter, but they are not the sole or even the most important questions to consider when launching an eportfolio initiative. The most pressing questions pertain to purpose and learning design: "What do we hope to gain?" and "What difference might eportfolios make in the growth of students, faculty, and even our institution?" According to Connect to Learning, a multi-year research project conducted at twenty-four institutions (2014), three interrelated design principles are essential to success with eportfolios: inquiry, reflection, and integration (IRI). This approach puts the focus on learning, creating opportunities for transformative development across all sectors of the organization: students, teachers, courses, programs, and institutions. This field guide entry discusses key design considerations in fostering IRI at different levels of the organization, from courses and programs to cross-sector initiatives and even institutional adoption.

Keywords: learning design, eportfolio, learning outcomes, inquiry, reflection

Designs that Enhance the Integrity and Impact of Courses and Programs

Challenges, Benefits, and Affordances

Eportfolios enhance and intensify the benefit of high-impact practices (Eynon and Gambino 2016; Kuh 2008). For example, if students are prompted to work within their portfolios at multiple points throughout their studies, they accrue a body of work that they can reconcile and integrate during their capstone experience through the development of an integrative knowledge portfolio or a showcase portfolio (Peet et al. 2011).

However, Hubert, Pickavance, and Hyberger note that "any high-impact practice can be designed or implemented poorly" (2015, 15). The process of planning and implementing for successful portfolio integration involves many pedagogical and procedural decisions, as evidenced by Poklop and Peagler's eportfolio planning framework below (2010).

Figure 1. Eportfolio Planning Framework
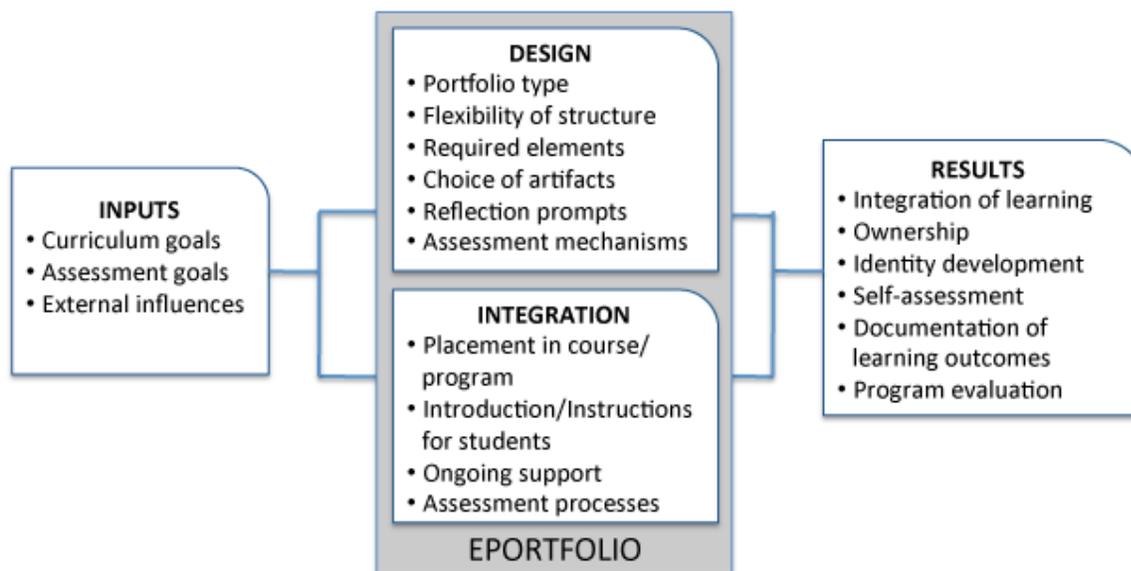
(Used with permission of the author © Laurie Poklop 2010.)

Eynon, Gambino, and Török observe that these planning and implementation decisions are best guided by IRI design principles:

> Design principles are concepts used to organize the discrete elements of a structure or process. The way in which these principles are applied affects the quality, effectiveness, or success of the work. . . . Our experience working with scores of campus eportfolio projects suggests that Inquiry, Reflection, and Integration (I-R-I) function as design principles, playing a critical role in shaping pivotal practices and strategies of successful ePortfolio initiatives (2014, 1).

The easiest way to implement eportfolios is to add them into a course or program without making modifications to the curriculum; for example, by requiring students to attach assignments in their eportfolios and submit them at the end of each course. However, this approach is unlikely to attain significant improvements in student learning because students are simply using eportfolios as a digital drop box. Students will gain more, and instructors will learn more about their students, if the course is redesigned to promote eportfolios as a space for reflection, peer and instructor feedback, and connection-making. Eportfolio integration at the program level can also involve the revision of suites of courses or even curriculum redesign.

Strategies for Inquiry, Reflection, and Integration

Eportfolios can be used as an inquiry space in which students wonder aloud, share and seek input on works-in-progress, and discuss opportunities for improvement with peers and faculty. Students can be prompted to reflect on strengths and challenges when they enter work into their portfolios, especially in relation to course and program learning outcomes. The digital space also makes it possible for students to share what they are doing with people beyond the classroom, presenting

an integrated body of work that can increase their perception of the importance and validity of their accomplishments.

At the program level, faculty can discuss and develop strategies for helping students make connections across courses. For example, a new perspective on learning is gained when students keep a running record of reflections and work from every course in their portfolios and are prompted to look for recurring themes. Student metacognition and self-directed learning also can be improved through an iterative and guided eportfolio process of inquiry, reflection, and integration. The learners can be prompted to review the program outcomes to consider their gains and areas for improvement. Student awareness of learning outcomes rose to 63 percent from 27 percent after Salt Lake Community College embedded eportfolios in its general education curriculum (Hubert et al. 2015, 18).

Student motivation and engagement is critical to the success of eportfolios, as the learners will not invest in that work if it is solely for assessment. For this reason, it is important for portfolio-based assignments to promote creativity and the expression of individual identity, and for students to know that their work will be read and valued by others.

Design Questions to Consider

Student work samples, reflections, and revisions provide a rich source of data for student self-assessment, course revisions, and program improvement, especially if the evidence gathered correlates with course objectives and program-level outcomes. However, these scenarios also need to be carefully planned, designed, and implemented. Questions to consider include:

- What types of work and reflections will be included? How does that work correlate with and further course and program goals? How will courses be designed or modified to support the IRI process?

- Will the portfolio structure be designed, for example, through the use of a template, or will students have complete autonomy—and what are the tradeoffs? Will certain elements or the inclusion of specific work samples be required?

- Reflection can be challenging even for advanced learners, and thoughtfully worded prompts are key to success. When and how will students be prompted to reflect? If it's a program portfolio, will the reflective prompts be the same across courses or will they be course-specific? (see the following for prompt examples: University of Delaware 2013, LaGuardia Community College 2013, Matthews-DeNatale 2013).

- Will the portfolio be private, public, or something in-between (combination of hidden and public pages)? Could students create more than one—and what are the tradeoffs? Sometimes faculty assign group portfolio projects—will that be an option, and if so, can this work be linked to or embedded in individual portfolios?

- When and how will students work within their portfolios? Who will look at the eportfolios, and how will students receive constructive feedback and affirmation of their work? Will the process include peer feedback?

- When and how will students be encouraged to share their portfolios with others (e.g., peers, family, employers)?

- What are the criteria for excellence? How will these expectations be communicated (e.g., rubric, outcomes framework, professional standards)? Will excellence be celebrated? Will exemplars be provided?

- When and how will faculty examine the portfolios? What will they focus on in their review (e.g., specific evidence of learning outcomes, quality of the eportfolio as a whole)? Will this process include a rubric? What will be the opportunities for faculty to discuss the observations of student growth and challenges that they observed in the portfolios? How will these insights be used for program improvement?

- Course-level eportfolio integration is usually planned and implemented by an individual faculty member. Program-level eportfolio integration usually brings additional people into the design process (e.g., faculty, program directors, instructional designers, academic technologists, the center for teaching excellence). Given your own process (as an individual faculty member for course-level integration) or your program's organizational culture (for program-level integration), what resources are available to you and what is the most helpful way for those entities to be involved?

Designs that Facilitate the Assessment and Improvement of Institutional Initiatives

Challenges, Benefits, and Affordances

Because eportfolios document students' personal and professional growth and experiences, they can be used to assess and demonstrate the impact of strategic initiatives (e.g., interdepartmental collaborations, special projects, the academic and experiential dimensions of co-ops or internships). Each eportfolio tells the story of an individual student's experience, and as a collection they tell the story of the initiative as a whole (Matthews-DeNatale 2013). These personal stories add richness to evaluation data for initiatives that might not otherwise be available, helping evaluators see the whole picture of the initiative and understand its impact in greater detail. What's working? What is falling short of the original aspirations? What are the pleasant surprises? What are the unintended consequences? Eportfolios can help new pilot initiatives refine, improve, promote, and evolve into fully supported, ongoing initiatives.

Eportfolios can make an initiative more visible to others. Seeing the work of their peers helps students conceptualize the type of experience they might gain from an initiative, leading to increased participation. Student eportfolios can also be used to promote the initiative to school leadership and decision makers, other institutions, and even external funders.

As with any large initiative, it is important to approach planning and implementation from a design perspective. The vision for the initiative and its desired impact on student learning should be identified before embarking on the design process and align with the institution's overarching mission and priorities. In their book *Understanding by Design*, Wiggins and McTighe refer to this process as "backward design" (2005). It is essential for the initiative's vision—and the role that eportfolios play in support of those aims—to be articulated, vetted by stakeholders, and widely disseminated. Explicit communication helps ensure that the intended purpose drives the design process forward, providing both the rationale and guidance for students and the staff and faculty who will support students in these efforts.

Strategies for Inquiry, Reflection, and Integration

Eportfolios can be integrated within institution-wide efforts to ensure that students meet or exceed expectations of larger initiatives. Institutional initiatives typically run the breadth and depth of courses and programs, and can also extend to cocurricular experiences. For example, students at the University of Waterloo developed eportfolios to document the "soft skills" they gained through its co-op initiative (Penny Light et al. 2012, 131). Indiana University−Purdue University Indiana (IUPUI)'s electronic Personal Development Plan (ePDP) initiative helps students set developmental goals that are grounded in evidence of their work (Buyarski et al. 2015).

When planning to use eportfolios at the program level, it is important to identify when and how the students will be engaged in reflection and who will initiate that process. Prompting students to ask themselves "What? So What? Now What?" when they add each artifact into their eportfolio helps build a culture of reflection throughout the initiative. Encouragement to reflect and guidance usually comes from faculty, but others such as advisors and peers can also participate in the prompting and feedback process. As reflective practice becomes part of students' learning practice, they will begin to self-assess their work without prompting. This guidance and mentoring is especially important if students are building an eportfolio throughout several years. When students are prompted to work on their eportfolio regularly, they accumulate a body of work samples and reflections, making it possible for them to review, process, and integrate their entire experience at the end of their studies.

Design Questions to Consider

Consider the following questions in addition to those recommended for course/program-level eportfolio integration:

- What mechanisms will help the initiative participants and leaders develop and maintain a shared sense of initiative purpose and importance?

- How will the initiative's purpose be communicated within and beyond the organization?

- Where is the initiative housed? Who is ultimately responsible for its success? What recognition or authority and resources will they need to carry out the responsibility?

- How will the initiative be coordinated if it involves multiple sectors of the institution (e.g., academic programs, cocurricular experiences, advising, and career services)?

- What additional resources and support will be needed, and how will they be made available (e.g., technical support and orientation for eportfolio development)?

- Who will initiate and attend to the reflection process (e.g., advisors, faculty mentors, co-op coordinators)?

- What data will be examined for the purpose of formative assessment, to tweak and improve the initiative, and to evaluate the initiative?

- How will the results of the initiative be shared and discussed? With whom will they be discussed?

- Initiative-level eportfolio integration often spans programs and even cocurricular support units. Given your institution's organizational culture, what entities would it be helpful to

involve in the planning of your cross-functional initiative, and how will they be involved? Who needs to vet the plan, and what are their expectations for the format, level of detail, and frequency of communication? If there is ambivalence to the organizational change associated with this initiative, how will those concerns be recognized and addressed?

Designs that Facilitate Institutional Learning

Challenges, Benefits, and Affordances

According to Randy Bass, since the mid-1990s higher education has been in a "powerful transition, moving from an instructional paradigm to a learning paradigm—from offering information to designing learning experiences, from thinking about inputs to focusing on outputs, from being an aggregation of separate activities to becoming an integrated design" (2012, 24). Eportfolios can greatly enhance the assessment of "integrated design" effectiveness at the institutional level. For this to be effective, however, eportfolios need to be integrated into system-wide processes and assessment methods at the institutional level. Eportfolios provide a wealth of data that can help institutions gain a holistic perspective on strengths and opportunities for improvement in relation to institutional goals for student learning outcomes. According to Susan Kahn,

> With clearly articulated learning outcomes and rubrics, faculty or other evaluators [can] readily identify strengths and weaknesses across student eportfolios in a course, program, or institution. Accreditors and other external evaluators [can] drill down from aggregated assessment results to individual examples of student work assessed at various levels— evidence that specialized accrediting bodies in the US [are] increasingly requiring (in press).

Goals and outcomes are typically derived from an institution's mission, vision, and values statements, identified from general education learning outcomes and commonalities across college/program goals, but they can also be derived from frameworks and rubrics generated by national initiatives such as the AAC&U Liberal Education and America's Promise Essential Learning Outcomes or Lumina Foundation's Degree Qualifications Profile.

Role of Inquiry, Reflection, and Integration

Once the institutional-level goals are identified, faculty and other academic leaders can consider where the goals are currently being addressed, for example by mapping goals to existing courses within the curriculum. Then they can consider opportunities for redesign to increase synergy across courses, cocurricular experiences, and co-ops or internships. This should also include the identification of seminal experiences such as signature assignments that will serve as "artifacts" or evidence of progress toward goals. As with eportfolio use at the initiative level, a system-wide eportfolio process has the added benefit of increasing student and faculty awareness of, and reflection on, cross-curricular goals for learning and outcomes.

Systems for institution-level assessment vary, but many involve an inquiry phase during which faculty teams sample eportfolios and score work according to a rubric. At LaGuardia Community College, this assessment process takes place in three-year cycles. The first-year entails review, the second is dedicated to curriculum revision planning, the third to implementation of revisions, and the cycle begins again the following year (Arcario et al. 2012). Portfolios often include deeply

personal stories and examples of learning, and so it is also important to look beyond formal outcomes, pre-identified by the institution, to identify emergent themes of learning that were not anticipated (Wehlburg 2015). What did students learn that wasn't expected? What surprising results were seen in the eportfolio? How can these unanticipated results help to better enhance student learning?

Results can be shared campus-wide during a reflection phase to discuss what is working (and should be kept) and what is not working (and should be modified or changed), followed by an integration phase that involves developing curriculum revision strategies for improvement. Accreditors are increasingly calling for evidence of learning that goes beyond grades, and therefore this assessment can be used to help improve *and* demonstrate learning outcomes. For example, the New England Association of Schools and Colleges (NEASC)'s Inventory of Educational Effectiveness prompts, "Other than GPA, what data/evidence is used to determine that graduates have achieved the stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)" (2016).

Design Questions to Consider

Consider the following questions, in addition to those recommended at course-, program-, and initiative-level implementation:

- What public claims is the institution already making about its distinctiveness and impact on student development?

- What internal discussions are taking place about potential revisions and/or additions to the institution's proclaimed purpose and identified outcomes? Who is involved in those discussions? Who else could or should be involved?

- How will the institution know if it has attained the outcomes? What evidence (student work) will demonstrate student progress toward outcomes? What role might portfolios play in documenting and assessing current and aspirational outcomes?

- What will be your system and schedule for eportfolio review? Who will be involved in developing the system (e.g., faculty, academic administrators)? What will be the roles and responsibilities?

- How will this be positioned as a generative process instead of a "check the box" exercise? What will be the incentives and intrinsic rewards of participating?

- As with organizational initiatives, the integration of eportfolios at an institutional level can involve significant changes in organizational process and culture. In addition to identifying and engaging key people while planning, what approvals will you need (e.g., academic councils, faculty senate, board of trustees)? What is the most constructive way for these entities to be involved, and what are their communication expectations?

Future Design Directions and Opportunities: Designs that Facilitate Connections Beyond the Institution

Design Considerations

The twenty-first century calls upon students and educators to attain new media literacies that include proficiency with multimodal composition and virtual collaboration (Partnership for 21st Century Learning, n.d.; Rheingold 2012; Selfe 2009). These additional curricular goals have tremendous implications for learning design at all levels of the institution.

Multimodal composition engages students in the development of multiple forms of literacy. However, the use of technology does *not* automatically result in increased digital literacy. Courses, programs, and institution-wide initiatives need to be carefully designed to foster multimodal critical thinking, reflection, and self-assessment in relation to multimodal "texts." An expanded definition of literacy calls upon students to become multimodal authors who leverage and integrate written, oral, and design skills when composing portfolios that articulate their goals, curricular and cocurricular experience, and evolving identities (Matthews-DeNatale and Poklop 2015). Audiences who access these students' portfolios will do more than read; they will also listen to and view integrated work that is personal, critical, and authentic.

Eportfolios can also be a tool that supports an extended or expanded picture of students' experiences and accomplishments, acknowledging the numerous facets to learning and the many settings (formal and informal) in which learning takes place. They will help students create a holistic representation of their many experiences, learning paths, and developing abilities.

Role of Inquiry, Reflection, and Integration

Stanford University and Elon College are experimenting with "extended transcripts" that represent the many forms of student experience and work in addition to grades (Mangan 2016). Other developments on the horizon within higher education include competency-based education, stackable degrees, micro-credentialing through certificates and badges, and the use of learning analytics to predict and improve the student learning experience (Aguiar et al. 2014; Ambrose 2015; Cambridge 2013; Rosen 2015). Once again, systems will need to be redesigned to maximize the benefits of eportfolios without fragmenting or compromising the learning experience. Eportfolios could provide a place for students and faculty to see how the learning is adding up, identify gaps or red flags, and integrate the whole learning experience.

Design Questions to Consider

- What literacies will your students need to thrive after graduation? What opportunities to develop these literacies do students already have in the existing frameworks for curricular, cocurricular, and co-op/internship experiential learning? How might these systems be revised or expanded to better support multimodal literacies?

- What evidence of experience and proficiency are students already able to share with others upon graduation? How might the existing systems be revised to incorporate eportfolios that help students convey an expanded view of their experience and proficiencies? How will the systems be set up to ensure that students can access and share their eportfolios after graduation?

- What degree formats are already offered by your institution (i.e., bachelor's, master's, doctoral degrees)? What additional formats might be appropriate for your institution's mission and student population (i.e., certificates, stackable degrees), and how might eportfolios help support both established and emerging systems of credentialing?

- As with other systems-level initiatives, who will be essential to the development and endorsement of these innovative ideas (e.g., curriculum committee, registrar, provost's office)? Is it possible that the initiative be sponsored by one or more of these entities, and if so, what do you already know about the motivation, aspirations, and interests of those who are supporting these efforts?

Conclusion

Students who internalize the eportfolio process of evidence-based inquiry, reflection, and integration will be equipped to take control of their learning, thinking deeply and strategically about their development for years to come. Faculty, programs, and institutions also benefit tremendously when iterative inquiry, reflection, and integration is incorporated into organizational practice. However, this new approach to individual learning and organizational development needs to be intentional to reap the benefits: carefully planned with a focus on learning design, adequately resourced, and thoughtfully implemented. The questions for consideration in this chapter are intended to help readers make wise and strategic design decisions in relation to eportfolio initiatives.

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3. Authentic Learning: Eportfolios Across the Divide

Gary Brown and Kurt Thoroughman

"I've never let my schooling interfere with my education."
—Mark Twain

In this chapter, we explore authentic learning through historical and modern lenses. Authentic learning encompasses integration of personal identity, intellectual agency, and real-world connection. Education research has classically valued these experiences as central for fostering higher-level thinking, worldview, and citizenship. In our contemporary world, these integrative perspectives are critical for addressing challenges in twenty-first-century workplaces and societies. We share examples to illustrate how eportfolios are helping define authentic learning, and we pose questions that currently arise from their use. We conclude with two examples that illustrate the challenge and potential of eportfolios that link to and beyond the classroom.

Keywords: authentic learning, prior learning, competency, accreditation, high-impact practice

Authentic Learning—What Is It?

Rule (2006) suggests that the term *authentic learning* gained acceptance more than two decades ago as a way to identify and promote learning tasks designed to help learners transfer school learning to life or work settings. She traces the history of authentic learning to Resnick's (1987) notion of linking apprenticeships with classroom learning, and to Collins' idea of situated learning with its emphasis on contextualizing knowledge and skills in ways that "will be useful in real life" (1988, 2). In practice, the construct of authentic learning predates its definition. Apprenticeships, internships, case methods, collaborative problem-solving, service learning, project-based learning and other teaching strategies all represent practices that engage students in tasks intended to prepare them for work in life and in the world. There are threads in many discussions about authentic learning that pertain to the importance of integrating authentic pedagogies and eportfolios. Among the most prominent are the ideas that authentic learning activities should be intentionally designed to place the learner at the center of instruction (Maina 2004), that learning tasks have no predetermined solutions or strategies for addressing the problem, and that the work project (artifact) should be presented to audiences beyond the classroom (Renzulli, Gentry, and Reis 2004).

Why Authentic Learning Is Needed

The best reason for implementing authentic learning has not changed in over one hundred years and subsumes more than a century of educational theory and pedagogical debate: the "great waste" in educational practice, Dewey observed, is that students are unable to "apply in school" what they "learn in life" and, at the same time, they are "unable to apply in life" what they "learn in school." In other words, Dewey argues, "Isolation in school is isolation from life" (Dewey 1900, 89).

Nonetheless, the fact that authentic learning is an essential and powerful pedagogy is not the most prominent reason that the practice is needed. Instead, higher education finds itself in a new and challenging context characterized by burgeoning student debt, government scrutiny, and public skepticism about the value of higher education. Employers are also among the critics of higher education. They contend that college graduates are insufficiently prepared for the workplace. According to a 2015 Gallup survey (Busteed 2015), though 96 percent of chief academic officers in colleges believe students are adequately prepared to start their careers, only 11 percent of business leaders perceive college graduates to be ready for work. Only 21 percent of parents are now certain that higher education is worth the cost (Williams 2016). And most important, students perceive the skills gap, with only 35 percent feeling prepared to enter the workforce (Stansbury 2016).

There is substantial evidence that supports employers' and students' perceptions. A 2016 report from the National Center for Education Statistics reports that in international comparisons, US adults perform at the lowest proficiency levels in all of the skills tested (Rampey 2016). Even so, the skills gap is not unique to the United States. In Australia, PerthNow (2016) reports that companies are discovering that students have "been taught the wrong things" or have "no real skills" (Burke 2016).

In response to the skills gap, the US Department of Labor is providing nearly $2 billion in grant funding to the Prior Learning Assessment (PLA), which offers equivalency exams for assessing what people have learned outside of classrooms as an alternative to attending formal schooling. Though the goal of the initiative is to improve community college recruitment, retention, and completion by valuing a student's experience and learning outside the classroom, the PLA also validates authentic learning. This rapidly growing role of authentic learning in the curriculum is not trivial. In a 2010 study, the Council for Adults and Experiential Learning (CAEL 2016) found that adults who receive college credit for what they know are two and a half times more likely to attain their degrees than those who do not. With minorities, the gains are multiplied by eight. CAEL, moreover, promotes portfolio assessment as a way to save students time and money by applying PLA credits towards their postsecondary degrees.

At Chippewa Valley Technical College (CVTC), for example, students "compile a series of professional portfolios" (2015) to demonstrate how their employment and life experiences helped them develop knowledge and skills equal to credits in the CVTC Business Management program (see Chippewa Valley Technical College Case Study). Prior to the creation of new assessments and a portfolio template, the passing rate for PLA proficiency exams was around 20 percent. As of September 2015, the passing rate was 92 percent.

PLA is one example of authentic learning that renders the traditional definition of learning obsolete. It is no longer sufficient for learning to merely mimic real life. Prior learning is drawn from real life. Other forms of credentialing authentic learning are similarly finding value and challenging the artificiality of the old classroom.

The Association for Talent Development (ATD) is one of many institutional and professional organizations pointing to the power of digital badges (Educause 2016) to motivate, demonstrate, and validate learning and development. Digital badges are currently in use at postsecondary institutions such as the Massachusetts Institute of Technology and Yale University; NASA; the US Department of Education; and the Smithsonian. To assess prior authentic learning, Opperman

(2015) says, "Digital badges can measure what skills and competencies a learner has acquired from professional development opportunities."

The preceding examples only touch on the dramatic reshaping of the higher education landscape. Our culture and our economy grow more connected and more global, and our challenges more complex and more interdisciplinary. Our students include those of broader ages and experiences, and "swirlers" who cycle between academe and work (Selingo 2013). These new realities ensure that credentialing, assessing competencies, and otherwise valuing students' experience in work and life—their authentic learning—will only grow in appeal.

An Integrated Response—How Eportfolios and Authentic Learning Are Being Successfully Implemented in Two- and Four-Year Institutions

The rapid growth in the amount of prior learning and eportfolios used for assessment is prominent but belies the purpose and potential of eportfolios for learning. More broadly, the integration of authentic experience throughout education provides a scaffold to graduates and citizens. Well-designed and well-implemented experiential learning provides critical checks and balances as students form their own perspectives, goals, and mindsets and encourages creativity, community, and making connections between and beyond formal coursework (De Santis and Serafini 2015).

Fortunately, there are models that demonstrate how academic programs integrate eportfolios, life, and work, and that focus on students' personal and professional growth and learning. At Auburn University, the Human Development and Family Studies (HDFS) ePortfolio Initiative invites every HDFS undergraduate major to develop an eportfolio that showcases her accomplishments through purposeful reflection in support of post-graduation goals (see Auburn University Case Study). The curriculum is collaboratively developed so that students contextualize and deepen their experience—their knowledge and skills—as they reflect on their growth and how their learning prepares them for their future professions. The sequence of courses provides an intentional progression from the classroom toward increasingly authentic experiences (culminating in a senior eportfolio project) that emphasize critical thinking and focus on the skills students develop by **"working collaboratively with others, interacting effectively with diverse populations, or using technology to accomplish work-related tasks."**

These examples illustrate how students design their own omnipresent workspaces and develop their own authentic narratives. Whereas these evidence-based practices represent solid programmatic goals across higher education, the widespread implementation and sustainability of authentic learning has proven problematic. Designing and mentoring students' authentic experiences require investments above and beyond traditional methods from teachers, institutions, and broader communities. The two stories that follow illustrate possible challenges and implications.

Challenges Ahead—Two Case Studies

Case Study One

Several years ago, a courageous operations management faculty member assigned authentic learning tasks to his teams of online students. Members of each team resided in different locations around Washington state, and yet teams identified real projects for their study of supply chain management. The projects were enormously successful. They ranged from helping a single mother in rural Washington manage her pantry as she raised three teenage boys to a team project done for a bank in urban Seattle in which the team significantly improved customer service. One team developed a way to reduce shrinkage at a rural dairy plant. The project was so successful that the head of the plant reported that it saved over $1 million a year and subsequently saved the plant from going out of business (and saved dozens of jobs in the process). The member of the team who actually worked at the plant was promoted. Other team members were offered jobs but opted not to move to the plant's rural location. As an efficiency expert, the faculty member came to realize that putting primacy on the facilitation of student projects rather than grading their homework or commenting extensively on their threaded discussions provided greater yield in student learning and saved him valuable time.

When news of this course's success with authentic learning reached the institution's vice president of distance education, she said, "This is fabulous! Too bad we don't have assessment that proves that distance education works."

The vice president's challenge merits an authentic answer that first acknowledges the habituation that shaped her response and also underscores the extent of the challenge. Like the vice president, the expectations of most students also default to tests and grades. But eportfolios, if their use is to fulfill their promise as something more than a technologic mechanism used to mediate the status quo, must leverage students' real lives as well as enhance those lives.

Case Study Two

When doctoral candidate Margo Tamez started her portfolio as a way to provide her dissertation committee with a forum to review her project, the eportfolio was a mechanism of convenience. Her study was about activist Native American women. At that time, the federal government began building a border fence across her ancestral homeland. Her eportfolio quickly morphed from a means for depositing her first study of activists to an interactive living space she used to facilitate activism. Margo opened access to her eportfolio and then distributed her concerns through a variety of social media engaging a broad range of support including legal scholars who joined in the defense of her family's ancestral land. Margo ultimately was invited to present her case to the United Nations.

Several months later, Margo's eportfolio was presented at the AAEEBL conference as an example of the authentic learning potential of an eportfolio. An attending faculty member blogged a critique of Margo's eportfolio, saying that "the portfolio should not be considered as a 'pantechnicon' of all that a student has ever produced." He said, "I cannot begin to think that Margo has a particular audience in mind for this tumble of evidences. Rather, the eportfolio should be seen as that selection of appropriate artifacts, either work in progress or completed activities, that the learner feels are the best exemplars of learning processes." He argued, reasonably, that "the

eportfolio should be an organized and well-presented selection of artifacts supported by intelligent comment for a particular audience."

Margo included a Touchgraph in her portfolio that alerted her to any discussion about her eportfolio (See Figure 1)

Figure 1. Margo Tamez's Touchgraph.
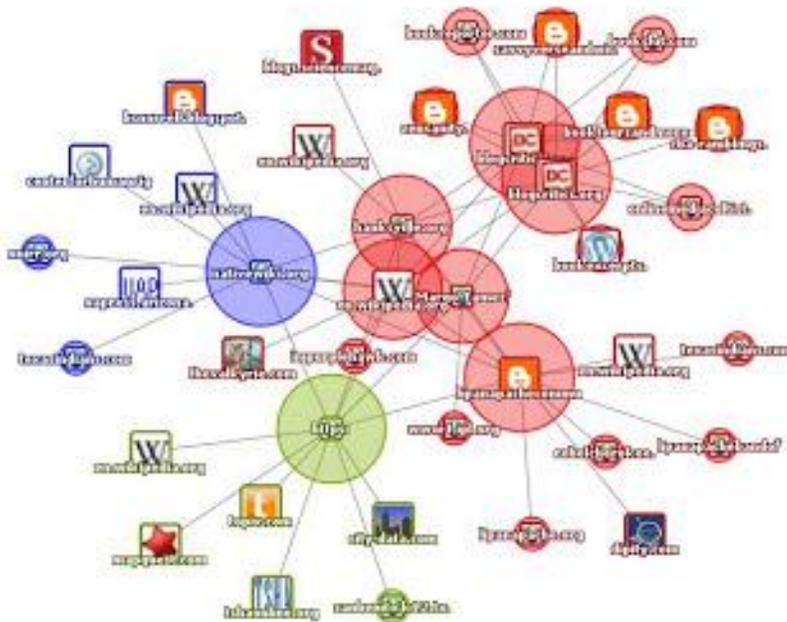
In response to the interest in her eportfolio, Margo responded:

"I would advise anyone who is seriously committed to the larger structural uses of eportfolios by contemporary students—who by the way do not view the college classroom as their most significant 'center' of knowledge and tool acquisition—to examine their assumptions about knowledge and power and the political will of the Indigenous peoples." Furthermore, Margo pointed out, "Speaking as one who had federal court judges, and government drones in mind as I 'tumbled out my evidence' in my eportfolio—I'd really sit back and think about why the corporate/government/state university wants more electronic access to the anomalies—like me."

She continued, "Why such rigid parameters about the 'tumble' of what comprises knowledge and the process of creation and synthesis? This makes students' real lives, experiences, and real 'selves' rather flat and ordinary and I must also add, rather 'lumped' together in predictability. Aren't we really having layered conversations at each other and not with each other, referring to the always flattening strata created by this approach to thinking about learners' ways of knowing and being . . . ? You speak to the layer of the strata which owns you . . . and which you work for, truly."

Margo asked another *authentic* question, which points to the potential and challenge of eportfolios that link to and beyond the classroom: "Who is the eportfolio truly for?"

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4. Promoting Student Cognitive Development: Integrative Learning, Reflection and Metacognition

Samantha Streamer Veneruso, Elizabeth Black, Caryn Chaden, Geoffrey Habron, Kristyn Muller, Benjamin R. Stephens, Joan Monahan Watson, and Kathleen Blake Yancey

The often unspoken expectation for academic success is that students are able to "integrate learning—across courses, over time, and between campus and community life" (Taylor, Huber, and Hutchings 2004, 13). However, while institutions of higher education support student learning across multiple venues, these venues do not necessarily articulate well with one another. Classes, fieldwork sites, cocurricular activities, internships, co-ops, and places of employment all contribute significantly to the education of the whole student, but many models of education lack a curricular provision for challenging students to explore the relationships among experiences occurring in these sites. Because traditional educational environments segregate content, methodology, philosophy, theory, and practice into sites siloed from one another, students need to learn how to identify, explore, and explain connections that may unify the many factors of their academic, professional, and personal lives. As important, in exploring such connections, students may see contradictions worth pursuing as well.

Even if disciplinary curricula do not provide for such integrative practice, instructional pedagogies and methodologies most certainly may. When implemented deliberatively with the appropriate supporting pedagogy, eportfolios encourage students to make "connections among concepts and experiences so that information and skills [encountered in different contexts] can be applied to novel and complex issues or challenges" (Ithaca College 2016). The following chapter provides information about how eportfolios deepen and enrich students' learning and cognitive development by providing both occasions and sites for students to explore, reflect upon, and synthesize learning, and to communicate about the otherwise fragmented elements of their education.

Keywords: metacognition, integrative learning, reflection, cognitive development, eportfolio

Integrative Learning

In the early twentieth century, Jean Piaget introduced a theory of cognitive development that contributed significantly to understanding the value of integration in human learning. Piaget maintained that cognitive structures or schemes, which represent categories of knowledge, are created, merged, diverged, or removed through the iterative functions of assimilation and accommodation (Ormrod 2008). These integrative functions are central to cognitive development and exist as innate tendencies among humans. Today, fostering the practice of forging and organizing connections among and between previous knowledge, lived experiences, and new information is central to the mission of institutions of higher education seeking to prepare students to make informed judgments, become engaged citizens, and solve complex problems (Taylor,

Huber, and Hutchings 2004). (See also AAC&U's Integrative Learning VALUE rubric and Campus Models for Integrative Learning and Eportfolios.)

Eportfolios can encourage students to consciously attend to these integrative functions through the acts of examining, selecting, curating, and reflecting on artifacts, demonstrating their learning across a range of contexts and experiences that involve different sets of knowledge bases, learner agency, application, relevance, and audience (Yancey 2009; Chen and Penny Light 2010; Nguyen, 2013). The phrase "collect, select, reflect, and connect" is commonly used to describe the basic activities associated with the development of eportfolios; in practicing these behaviors, students are encouraged to re-contextualize specific experiences and then integrate them into the "big picture" that depicts how they know the things they have come to know. Thus, the benefits of an eportfolio are not made manifest in the simple curation of artifacts, but in the questioning of how, why, and what one has learned (Zubizarreta 2009).

Reflection

Empirical evidence supports the notion that eportfolios can enhance students' reflective thinking skills (Hakel and Smith 2009; Scott 2009). The act of reflection requires an intentional awareness of the role that different experiences play in the learning equation. Defined as a "systematic, rigorous" meaning-making process "that moves a learner from one experience to the next with a deeper understanding of its relationships with . . . other experiences and ideas" (Rodgers 2002, 845), reflection is a critical feature of integrative learning. Given the lack of regularized summary and integration of learning across contexts, it is recommended that instructional efforts include structured reflection to help learners identify the tacit knowledge they glean from these experiences (Peet et al. 2011). For example, the DEAL Critical Reflection model provides prompts that ask students to examine an experience in terms of personal, academic, and civic perspectives in order to provide further depth to the reflective process (Ash and Clayton 2004), and the LaGuardia model asks students to consider the multiple audiences interested in such artifacts (Eynon 2009).

Jensen and Tuerer (2014) argue that eportfolios enable students to see how learning has occurred and foster students' awareness of their growth and development as learners. When eportfolios are used to afford students regular opportunities to examine how they come to know, students develop the ability to explicitly understand their cognitive processes (TEAL 2012; Silver 2013). This metacognitive awareness can contribute to the development of self-regulation skills, whereby students recognize and use effective learning techniques and behaviors including identifying and assessing their learning strategies, monitoring their learning, and actively engaging in their learning experiences (Kolencik and Hilwig 2011; Silver 2013; Jensen and Treuer 2014). When eportfolios are used to give students regular opportunities to document and reflect on their learning processes, in addition to integrating their learning across contexts and time, the eportfolio experience fosters goal setting, task planning, and activity prioritization, which are key metacognitive skills for successful learners.

Metacognition

In addition to developing an explicit awareness of how and what students are learning, eportfolios promote metacognition by fostering scaffolded learning (see Takayama 2014). The experience of building an eportfolio, developing content specifically for the portfolio, selecting and organizing content for specific audiences, reflecting on and planning the eportfolio, and refining content based

on feedback and reflection all provide an iterative design process (Miller and Morgaine 2009). Each iteration of the portfolio allows for new reflection and deeper awareness of the content and process, advancing students' metacognitive skills along with deeper learning of the course content. Additionally, an iterative design process can allow for risk taking and experimentation and can foster student ownership of, and engagement in, the learning experience, further hallmarks of successful students and advanced metacognitive and critical thinking skills (Takayama 2014; Wozniak and Zagal 2013).

Implementation for Integration, Metacognition, and Reflection

Administrators can create conditions that encourage faculty to see the value of incorporating eportfolio pedagogy without worrying too much about the technology (see Chapter 12 in this volume). Here are some considerations to keep in mind:

- **Resources.** With sophisticated, readily available, and relatively open-source platforms with free-to-use options, like WordPress or Weebly, institutions may decide to direct resources toward services to support eportfolio pedagogy: faculty development workshops with materials to support innovative practices (e.g., multimedia reflections); training for tutors; and above all, staff support to coordinate these efforts and address questions. Open-source platforms will not provide a "back end" to support assessment and freeze eportfolios in time, but supporting faculty in eportfolio pedagogy around integrative learning, metacognition, and reflection is paramount to the success of an eportfolio initiative (especially at the start).
- **Target Programs.** While eportfolios can benefit students throughout the curriculum, the best bang-for-the-buck is at the program level, where they can develop over time, provide a focus around which students may incorporate a variety of work from different sources, and look toward future audiences. Program faculty can identify courses where eportfolios will consistently be assigned, and those teaching other program courses can ask students to submit a work sample for later reflection. (See DePaul's Eportfolios for Programs brochure and Salt Lake City Community College's Electronic Portfolios at SLCC.) Internal start-up grants could support such initiatives.
- **Purpose and Audience**. Educators and assessment officials should carefully consider the role of audience in the development of eportfolio activities. Having a known, engaged audience can contribute to students seeing the value of their eportfolio. Varied audiences promote perspective-taking as students anticipate how the eportfolios will be viewed by readers with different goals and backgrounds, leading to rich eportfolios with multiple artifacts, reflections, and connections across artifacts. Without a clear and engaged audience, eportfolios may be less effective in fostering cognitive skills and promoting student and faculty engagement in the eportfolio initiative. Mentored students have shown a significant improvement in overall positive subjective portfolio experiences (Klein 2014). Audiences should not just be for assessment, but also for learning; the appropriate audiences enhance student learning and investment. (See LaGuardia Community College's Showcase and Student Scholars programs; See also Stony Brook University's Eportfolio Showcase for Integrative Learning and University of Michigan's Eportfolio Celebration and Showcase.)
- **Where to Start Using Eportfolios?** Administrators should begin with programs that already use paper portfolios (e.g., writing, art, advertising) since some of the pedagogy

may already be in place. In addition, programs that require experiential learning (e.g., internships, service learning, study abroad, community projects) are good candidates because they offer the opportunity for documenting a broad range of experiences (Penny Light, Sproule, and Lithgow 2009; Ostman and Leaker 2016).

Conclusion

Eportfolios, when used purposefully, can significantly transform students' cognitive and metacognitive processes by encouraging and prioritizing integration, planning, and reflection. By providing non-linear, highly visual and visible spaces in which students may personalize and contextualize otherwise fragmented curricular pieces (Bass 2014; Clark 2016; Silver 2016), eportfolios can serve as an out-facing metaphor for illustrating students' learning and the integrative functions at work on them. By engaging in the reflective work of their eportfolios, students become metacognitively aware of their unique ways of knowing and the processes of integration that led them there. Over time and with practice, integrative thinking becomes a conscious habit of mind and social practice (McDonald 2016), empowering students to actively seek connections across otherwise disparate situations to deepen learning and engagement.

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5. Learners and the Digital Era: Digital Identity, Digital Literacy, and Eportfolios

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The digital literacies cultivated in the creation of an eportfolio have expanded our notions of communication and multimodal knowledge building. When students learn through eportfolios, they gain experience creating and managing a digital identity as they curate the portfolio, essential skills in the modern world. They master digital literacies as they negotiate multimodal artifacts in the creation of the portfolio. In addition, students gain control of self-authorship as they create this identity and learn more about themselves through this process of creation. The eportfolio learning process also provides students with metacognitive growth as they reflect on their rationales for the choices they made, their agency in the creation of the eportfolio, and their sense of who they are in the presentation of the eportfolio.

Keywords: digital identity, eportfolio, reflection, self-authorship, privacy, intellectual property

How Do Eportfolios Enhance the Development of a Digital Identity?

The knowledge, experience, and literacy development afforded by eportfolio creation aids in identity formation and developing a sense of self as a learner and future professional through the construction of a narrative of learning within the eportfolio (Belshaw 2012). The process of building the eportfolio helps students reflect upon their experiences, link their experiences, and construct an intentional scholarly and professional identity. Increasingly, that identity is a digital one. As a recent article in *Forbes* noted, employers are becoming more interested in seeing a digital portfolio than a résumé (Craig 2015). It has become commonplace for employers to search Internet sources for information on a prospective employee. Sources like Facebook, Instagram, Twitter, and LinkedIn constitute an accidental portfolio. In the face of these digital footprints, which often are not ideal measures or expressions of one's potential, it is essential that students and faculty alike become skilled in presenting themselves professionally by reflecting on, constructing, and curating a digital identity. The eportfolio is the ideal space to facilitate this activity.

How Do Eportfolios Help Students Develop a Sense of Self and Self-Authorship?

In her landmark longitudinal research of adult development among college graduates, Marcia Baxter Magolda found that many of her participants completed college without engaging in self-authorship. She argues, "The pace of knowledge production in today's society also requires forms of learning that in turn require self-authorship. Knowledge acquisition is no longer sufficient for adults to keep pace with rapid change" (Baxter Magolda 2008, 270). An eportfolio provides the space for students to engage in the activities essential to self-authorship—the ability to deconstruct external messages and to begin constructing their own identity based upon their own internal values, beliefs, and convictions. Through the process of self-authorship, students can academically experiment with their identity through an eportfolio (Bartholomae 1986). In eportfolio practice,

students are encouraged to examine evidence of their learning, reflect on their experiences, and integrate their experiences and learning. Through this practice, students develop a personal digital identity and the ability to articulate to other professionals how their experiences in college have prepared them for new professional roles.

What Does It Mean to Curate a Digital Identity through Eportfolios?

An electronic portfolio typically comprises content selected from diverse repositories of a student's digital material to present evidence of his or her learning, achievements, and accomplishments (Lorenzo and Ittelson 2005; Barrett 2010; Ravet 2005; Grant 2005). The process requires an array of technical skills and multiple literacies to convey a coherent narrative and an integrated representation of the student's work (Lane 2007; Ramirez 2011). While some students may be technically adept (Palfrey and Gasser 2008; Prensky 2001), many students may not have the skills or experience to manage or "curate" their online presence effectively (Bennet et al. 2014; Margaryan et al. 2011). Potter (2012, 175) identifies "curatorship as an active but complex literacy practice in new media, multistranded and developing over time." Taken as a metaphor for managing and maintaining the contents of an electronic portfolio, "curatorship" serves to describe the technical and rhetorical skillset and sense of responsibility students need to acquire in order to manage and control the evolution of their eportfolios online. Other researchers (e.g., Dillon et al. 2003; Dunbar-Hall et al. 2013) have explored the connection between media production in the creative arts and the multimodal and intertextual forms of meaning-making and self-representation necessary for building successful student eportfolios. These connections further develop the curatorship analogy and also frame the eportfolio construction process as "performance," "installation," "documentary," "choreography," and "curated exhibitions" (Dillon and Brown 2006). These skills contribute to eportfolio literacy.

(See the case study How Digital Storytelling Eportfolios Cultivate Metacognition by Beata Jones and Daniel Terry.)

What Is Eportfolio Literacy?

Paul Gilster conceived of digital literacy as "mastering ideas, not keystrokes" (1997, 15). Digital literacy includes being able to locate and access information, critically evaluate information and its sources, and build knowledge in the realm of networked computing. Being "digitally literate" or "transliterate" has become the ability to navigate this complex, dynamic, and evolving universe of representation in the digital world. Eportfolio literacy might be thought of as the negotiation, curation, and personalization of digital information and interactivity in order to create and communicate meaning and identity.

According to Sue Thomas et al., "The transliterate lifeworld is highly subjective, diverse, and complicated. It is not one kind of place, but many—an ecology which changes with the invention of each new media type" (2007, 15). As in Gilster's (2006) formulation of digital literacy, eportfolio literacy requires the fusion of content and communication; eportfolio literacy, then, involves making sense of this complexity through the lens of identity. Wenger defines learning as the integration of meaning (from experience), practice (from doing), community (from belonging), and identity (from being), pointing out that identity is a way to understand "how learning changes who we are and creates personal histories of becoming in the context of our communities" (1999,

5). Eportfolios, too, can trace the personal history of becoming, contextualized in a community of portfolio practice, of professional practice, or of the wider world.

Why Is Reflection Important to Eportfolio Literacy?

Reflection plays a key role in digital citizenship and digital literacies. The digital literacies required for personal, reflective, and metacognitive digital portfolios need to be explicitly taught. Friere (1970, 72) writes, "Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and with each other." Students create self-knowledge as they pursue the collection and selection of artifacts for a portfolio and then reflect on the meaning those artifacts take on in relation to one another and how they become part of the presented self in the eportfolio.

Reflection in eportfolio work fosters metacognitive skills in students. Metacognition may be thought of as "awareness and agency regarding the content and process of one's own thinking" (Terry and Jones 2015, 9). Students gain agency through eportfolio creation because they take charge of their own learning through reflecting on the meaning of information and experience, monitoring and adapting their thinking and doing, and representing their learning to others (Hacker, Dunlosky, and Graesser 2009). The process of making one's learning visible to others through eportfolios invites students to monitor, observe, orchestrate, and regulate their own thinking—all metacognitive skills. Similarly, Schon's (1983) work on reflective practice suggests that the capacity to reflect on one's professional action is essential for a process of continuous learning, and is a defining characteristic of professional practice. Eportfolios are important for this act of reflection in the digital space, since reflection in an eportfolio allows the author to create an identity and reflect on that identity. Given the consideration of multiple audiences in the curation and composition of an eportfolio, reflective practice becomes a specific skill of digital identity negotiation.

How Is Ownership of Learning and Digital Identity Related to Eportfolio Literacy?

Ownership of learning plays a significant role in advancing reflection, self-efficacy, autonomy, and self-authorship, all key to eportfolio pedagogy. As traditional structures for control of learning shift and managing learning increasingly becomes the individual student's responsibility, the sense of control the student has over the processes, material, and technology of eportfolios inevitably affects the quality and value of learning. In "Balancing the Two Faces of Eportfolios," Barrett (2010, 5) notes the tension between the design of "expressive" versus "structured" eportfolios, in which the former "leads to more learner ownership" while the latter "makes it much easier to collect evaluation data. The choice between these approaches will impact the intrinsic motivation and attitudes of students towards their eportfolios." In a study of fifty students, Buchem (2012, 19) identified "significant relationships between perceived control, sense of ownership, and uses of a learning environment based on the example of eportfolios in context of higher education." Ravet (2005) found eportfolios to be "composed of two main parts: the repository (archive), which is generally only accessible by the eportfolio owner, and the views (presentations) that are built from the contents of the repository and are accessible to target audiences (peers, employer, awarding body, parents, teachers, schools, etc.)." Similarly, in a detailed taxonomy of eportfolios based on primary purposes (such as "learning" versus "showcase," for example), Baumgartner (2009) listed

this question as one of the defining categories for each type of eportfolio: who is the owner of the portfolio, a person or an organization? Some institutions have tried to solve that problem of ownership by encouraging students to purchase and maintain eportfolios in their own domains (Kehoe and Goudzwaard 2015).

(See the case study Balancing Authenticity and Privacy by Elaine Gray.)

How Do Eportfolios Use Digital Literacies to Foster Digital Identities?

Identity formation and self-authorship have always been the main goals of portfolio pedagogy, which, even before the digital era, was heavily focused on autonomy, self-evaluation, and student ownership of the learning process. In this way, reflection has been a critical element for developing identity and achieving self-authorship. As students create their digital identities through eportfolios, they must contend with the fact that eportfolios involve multiple audiences. A key digital literacy is that students must account for how they address these multiple audiences through different strategies of presenting their digital selves. Gallagher and Poklop (2014) note that students might encounter "audience interference" as they negotiate designing and curating an eportfolio. For example, in trying to create one eportfolio for multiple audiences, choices appropriate for one audience might cause difficulty for another audience. As a result, the design could be ineffective for both audiences. Further, they assert that being able to consider navigation, content, and voice in an eportfolio is an essential skill where employers, assessors, or the public may be first introduced to a person through their digital presence.

As Jewitt (2005) noted, all writing is inherently multimodal. As one crafts in the digital space, one builds digital literacies. Transliteracies exist as readers see meaning across multiple modalities and texts and also as they begin to develop stronger literacies across and within multimodal texts (Ipri 2010). An electronic portfolio affords, therefore, the ultimate opportunity to develop such transliteracies. Eportfolios provide both the reflective space to consider what has been developed and how these developments are motivating the learner and changing the literacy practices.

What Is the Bottom Line?

Digital literacies have expanded our notions of communication and multimodal knowledge building. Eportfolios are serving as pedagogical vehicles for helping students self-author their digital identities, exercise control and ownership of their multimodal digital footprints, and hone their transliteracy skills. Through helping students learn these skills, eportfolios become facilitators of students' development of their learning, their metacognitive skills, and their changing personal and professional identities.

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6. On the Right Track: Using Eportfolios to Address Institutional Challenges

Tracy Penny Light, Katherine Lithgow, David Hubert, and Shane Sutherland

Institutional accountability is perhaps the primary main focus of university administrators today as they seek ways to attract and retain students, differentiate themselves from similar places of study, and document their institution's ability to be effective. This accountability must be demonstrated to a broad array of stakeholders, including students, parents, employers, accreditors, and policy makers, who demand "evidence of impact" of learning (Kuh et al. 2015). Yet institutions often operate in silos, with the work to support learning spread among and across academic, student, and administrative offices, making the collection of such evidence challenging. Eportfolio pedagogies and practices can help institutions to mediate these challenges as they facilitate a more integrative approach to the demands of stakeholders by providing a means for documenting the unique learning that happens on campuses.

In this chapter, we explore three opportunities to employ eportfolios for this purpose: (1) documenting learning with authentic evidence to make visible the diverse and unique characteristics of students pursuing higher education in the twenty-first century, (2) considering the ways that authentic evidence found in eportfolios can address the needs of different audiences and purposes, and (3) using eportfolio practices to align institutional priorities across stakeholder groups on a campus. We argue that employing eportfolio pedagogies and practices across the institution can assist in achieving better alignment of institutional missions with the pedagogical and assessment practices employed in curricular and cocurricular contexts.

Keywords: assessment, authentic evidence, documenting learning, institutional priorities, pedagogy, stakeholders

Documenting Learning with Authentic Evidence

Many of today's learners come to higher education several years after high school, and they are often first-generation and international students who have unique and diverse learning needs and goals. As such, colleges and universities must respond to the varied needs of this "new majority" to ensure the attainment of learning outcomes and transparency with respect to higher-order learning. Increasingly, student eportfolios are being used as one way to open up space for diverse learning to be assessed that values both curricular and cocurricular contributions to educating learners in the twenty-first century (Hubert 2015). If they are integrated into the curriculum and grounded in student outcomes, eportfolios provide learners with opportunities to document and understand what they know by making visible rich and authentic evidence of learning (Buyarski and Landis 2014; Penny Light 2016). They provide students with opportunities to showcase their learning between and among contexts to a range of audiences for different purposes, allowing them to personalize their learning by documenting their unique knowledge, skills, and abilities (Penny Light et al. 2011). Such opportunities are important, allowing students to document learning that occurred in different contexts, both on and off campus, and providing a more democratic approach to learning by recognizing that not all learners are the same.

Simply documenting experiences, though, is not enough. As Clarke and Eynon (2009) note, eportfolio work needs to include an emphasis on reflection to help students develop the metacognitive skills necessary for learning in the twenty-first century. At a time when institutions are asked to support more interdisciplinary learning, environments like eportfolios, which connect across disciplines and semesters and link the classroom to lived experience and broad life goals, can respond to this growing movement in integrative learning (Huber and Hutchings 2004; Reynolds and Patton 2014). To achieve this, though, faculty need support in redesigning curricula to leverage the pedagogies and practices of eportfolios. Educators should think about the "eportfolio *as* the curriculum" to truly leverage its potential. As such, institutions must commit resources to support the work of redesigning the curricula for this purpose.

Authentic Evidence for Different Audiences and Purposes

When institutions use eportfolios successfully to capture the myriad learning experiences on their campuses, not only do learners benefit, but so do the institutions themselves. The authentic evidence found in eportfolios can more effectively demonstrate that programs are facilitating the attainment of essential learning outcomes by learners than traditional forms of assessment (Hubert and Lewis 2014). Salt Lake Community College, for example, received stern criticism in 2004 from its accreditor regarding its ineffectual assessment of general education. After implementing an eportfolio requirement that began to directly assess student signature assignments keyed to general education learning outcomes, the college earned a rare commendation in 2014 (Hubert, Pickavance, and Hyberger 2015). Other campuses employing similar strategies include LaGuardia Community College (Provezis 2012); Clemson University (Ring and Ramirez 2012; Ring, Waugaman, Brackett, and Broadwell Jackson 2015); Indiana University-Purdue University Indianapolis (Scott and Kahn 2013); and more recently the University at Buffalo.

These and many other colleges and universities are responding to calls for more intentional and strategic use of high-impact practices (HIPs) to boost learning for all students, especially for the new majority and/or those from underrepresented groups (Kuh 2008; Brownell and Swaner 2010; Finley and McNair 2013). As noted above, eportfolios are perfectly positioned to help students showcase their work in HIPs and reflect on the connections between their learning experiences. At the same time, colleges and universities can use eportfolios to provide a framework that can organize curricular and cocurricular HIPs and assess students' best work (Hubert, Pickavance, and Hyberger 2015).

The use of learning evidence for assessment is not only valuable to institutions, but employers today are also looking for evidence that potential employees have developed specific skills such as communication, teamwork, analytical/critical thinking, and problem solving, often referred to as employability or transferable skills (World Economic Forum 2015; Association of American Colleges and Universities 2015). Unfortunately, these skills often are not assigned grades, or if they are, count for only a small portion of the overall assessment. However, this does not mean that students do not acquire or develop them. But, because these skills are not explicitly assessed, programs struggle to provide evidence demonstrating that students have developed them, and students themselves often fail to recognize that they have developed them or fail to value their development (Lithgow and Goodwin 2016). Having students create eportfolios in which they demonstrate how they have developed, applied, and transferred these skills addresses this gap and allows colleges and universities to demonstrate the ways they are preparing graduates for the

future. However, this documentation of knowledge, skills, and abilities needs to be scaffolded throughout the academic career, and students need to be provided with opportunities to integrate their learning and receive feedback on their skills development so that they can identify their strengths and weaknesses and develop plans, with the appropriate guidance, to address these limitations. Furthermore, an eportfolio allows students to document these skills in a way that is personally meaningful and that allows them to draw upon experiences not directly tied to a particular course. Through an eportfolio, then, students provide evidence of how they have integrated learning from both curricular and cocurricular contexts.

This use of an eportfolio is becoming increasingly important in an age when information is easily accessible and instructors are expected to do more than simply transfer knowledge. In many instances, learning may take place out of the classroom (in workplaces and community settings, through volunteer activities, and in a variety of curricular and cocurricular activities). In this environment, students and their instructors have become partners (Healey et al. 2014; Cook-Sather, Bovill, and Felten 2014; Bovill 2015), with students frequently being asked to map their own learning path and design their own learning activities and projects—ones that often take place outside academic walls. (See Ian Pirie's work on SLICCs in Edinburgh.) The challenge of scaffolding and integrating this learning can be met through eportfolios, as they can function as an extension of the university by partnering with stakeholders both inside and outside the university such as supervisors, co-op employers, and future employers.

Aligning Institutional Priorities

Since eportfolio pedagogies and practices are reflective and integrative in nature, they provide a unique approach that can be applied to align institutional goals and priorities. From faculty development to student affairs and institutional research and planning, eportfolios can allow institutions to synthesize their activities and articulate their work to a wide variety of stakeholders (Penny Light 2016). This encourages a move away from traditional institutional silos to one that considers the needs of a broad group of stakeholders invested in an institution's success from students to senior administrators, faculty, employers, and alumni. Indeed, eportfolios can provide opportunities for institutions to consider their work in a broad ecosystem of influences on higher education (Bass and Eynon 2016) that may allow us to transition to a learning environment that truly meets the needs not only of diverse learners, accreditors, policy makers, and faculty, but also of those in the wider world who will benefit from learners able to make connections and articulate the ways in which they can contribute to society. Paying careful attention to how eportfolio pedagogies and practices can meet institutional and program-level learning outcomes and carefully aligning these with strategic priorities and the goals of stakeholders will allow learning institutions to achieve the kind of integrative education that life in the twenty-first century requires of its citizens (Penny Light 2016).

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7. New Ways to Demonstrate Achievements: Warranting Eportfolio Evidence

Daniel T. Hickey, Kathryn S. Coleman, and Helen L. Chen

Open digital badges are indicators of specific competencies, knowledge, skills or capabilities, and issued as digital artifacts to warrant evidence of these achievements. Open digital badges can be issued to warrant evidence of achievement in formal or informal learning spaces. As digital credentials, digital badge technologies have made it possible for anyone to issue, earn, and display digital credentials. As a new technology, digital badges can assist learners to unlock career and educational pathways and display targeted achievements, capabilities, and skills that may otherwise go unwarranted or unrecognized by marks, grades, and/or diplomas. Digital badges have provided higher education providers with an opportunity to recognize more detailed aspects of learning. For example, whereas achievement of learning may be somewhat invisible in collated marks and grades, badges enable the certification of capabilities developed within tasks through eportfolios of curated evidence, including those that often go unrecognized on the academic record, such as team work, communication, problem solving, critical thinking and global citizenship. How do we warrant eportfolio evidence? Badge issuers design, develop, and issue badges to warrant and certify; learners claim digital badges after issue and display or stack badges in collections where and when they choose. They "are particularly relevant to our changing world because they open up our current system of rating and ranking to more nuanced levels of understanding, and allow a more evidence-based or personalized analysis of learning than traditional credentials provide" (Grant 2014, 11).

Keywords: open digital badges, assessment, credentials, eportfolios, evidence, warranting evidence

Key Issues

Limitations and the Need for Innovation in Academic Credentialing

The limitations of traditional academic credentials—the diploma and the academic transcript—have been recognized through the emergence of initiatives such as the Higher Education Achievement Report (HEAR) in the United Kingdom and efforts in the United States aimed at developing prototypes of a comprehensive student record. A student's transcript, with its inscrutable course titles, grades, and marks that are difficult to benchmark, has been called "a record of everything that the student has forgotten" by Thomas Black, Stanford University registrar (Mangan 2016). It is also often overlooked by employers who find it limited in its usefulness as a record of how much students have actually learned and what they can actually do.

The reexamination of established ways of measuring and recording learning has been, in part, incentivized by the growth in online learning, including Massive Open Online Courses (MOOCs), flipped classes, and competency-based education. Within the North American context of public concern about increasing tuition costs and a national push for quality education beyond degree attainment, the need for meaningful credentials beyond just the degree has become an economic

and societal imperative for students, employers, policymakers, and society at large (Chen, Grocott, and Kehoe 2016).

Eportfolios are one example of innovation in both the process by which learning is assessed and the products that demonstrate and communicate knowledge, skills, and capacities. They provide a platform for self-assessment and self-curation by learners to authentically tell the "story" of their learning experiences. As a product, the collection of evidence compiled in an eportfolio has broader value outside of the environment from which it originated, since eportfolios can also support authentication and demonstrate worth to a wider network of stakeholders. The intersection of eportfolios with emerging credentialing efforts such as open digital badges is particularly promising. Open digital badges can support authentication and provide additional information about the content of a portfolio, both of which, in turn, highlight the learner's claims. This chapter emphasizes two key features of open digital badges: the involvement of stakeholders in the design process and the use of evidence as a means to recognize and validate learning.

What Can Educators Learn from Open Digital Badges?

Involving Stakeholders in Codesign

Laura Fleming (2015) proposes in her article Create a Vibrant Digital Badge Ecosystem that "for any badging initiative to flourish, you must have all of . . . the components of a digital badge ecosystem, including badge issuers, badge earners, and badge consumers:

- badge issuers, who are individuals, schools, employers, institutions, communities, or groups that create credentials to demonstrate mastery of skills and achievements;
- badge earners, who are individuals who want to demonstrate their achievements to various audiences; and
- badge consumers, which are education providers, individuals, employers, communities, or other groups that are looking for people who possess the skills or achievements symbolized by a badge."

Digital badges have intrinsic value to stakeholders in the ecosystem in which they were designed and a synergistic relationship within the larger ecosystem. The synergistic effect of a localized badge ecosystem has an impact on the interdependence of the badges in the learning ecology.

Emphasis on the cocreation of digital badges with stakeholders promotes a more social and open approach to eportfolio learning and assessment. Collaboration between course leaders, students, professional entities, and advisors in developing standards and criteria and endorsing badges ensures that the achievement of the learner is understood and accepted by a wide range of audiences (Table 1).

The value of badges within their contextual situations for a range of audiences and purposes raises an issue of credibility and validity. "In order to compete with traditional credentials like degrees that boast centuries of credibility, organizations first need to create systems of badges that structure their educational offerings, serve audience needs, motivate learners to participate, and provide appropriate evidence to back up their claims" (Hickey et al. 2014, 1). Designing evidence-based badges can go one step toward creating an ecosystem that is trusted, valued, and credible by involving key stakeholders in the codesign and coendorsement of the badge. "Integrating experts

in the badging process boosts the credibility of the credentials and its value in a knowledge-based economy. This contributes to the validation of the badge and its potential usefulness in professional settings" (Hickey et al. 2014, 13).

Table 1. Stakeholders and Learning Design

Students	As the earners of many of the badges designed in higher education, inviting students into badge design teams is an important objective. As educators have learned from decades of eportfolio research, students need to be included as stakeholders when designing learner and learning-centered pedagogies. The codesign and development of digital badges can support the preparedness of graduates to demonstrate the desired capabilities and skills required by employers.
Educators	Institutionally designed badges to support academics as they develop good assessment practices can highlight both academic leadership as well as exemplary performance. New Milford High School has developed an educator support system for professional learning to provide a framework to allow its teachers to earn badges that recognize "professional and scholarly" approaches to digital learning.
Employers	Recognition by external stakeholders requires education and collaboration with employers, professional associations, and regulators.
Professional Associations	Acceptance of credentials as credit between institutions requires credibility and trust, both of which take time to develop (Carey 2015). Recognition of badges by these professional associations and credentialing bodies goes a long way in developing the required webs and trust networks that higher education needs to build ecosystems that have currency and value.
Professionals	There are a range of digital badge initiatives for issuing badges as alternate credentials for professional learning. Developing teaching portfolios (see Chapter 10) across our institutions is one way of designing a sustainable and credible new Continuing Professional Development (CPD) eportfolio and credential ecosystem. Designing learning pathways in higher education for connected learners is an increasingly important aspect of the digital world and the growth of an ecosystem.

Role of Evidence in Warranting Learning

Digital badges are web-enabled credentials. Proponents argue that digital badges "can open up our current system of rating and ranking to more nuanced levels of understanding, and allow a more evidence-based or personalized analysis of learning than traditional credentials provide" (Grant 2014, 11). The notion of digital "tokens" of accomplishment emerged alongside educational videogames and the "gamification" of education around 2005, with digital badges as web-enabled

credentials appearing around 2011 as a result of the groundbreaking Peer to Peer University (P2PU) and the emerging open learning community associated with the Mozilla Foundation and the MacArthur Foundation. The MacArthur-funded 2012 Badges for Lifelong Learning initiative generated widespread interest and catalyzed a much larger movement that has continued to evolve and capture broad interest in higher education.

Many of the early proponents of digital badges imported them into established gamification and competency schemes (e.g., Glover 2013). A diverse and vibrant network of nonprofit and commercial entities pursued innovative projects that helped show that digital badges presented the opportunity to recognize more detailed aspects of learning than was possible with collated marks and grades awarded in classes and then accumulated on transcripts or with printed certificates. In this way, digital badges allow educators, institutions, and programs to recognize more nuanced elements of conventional types of learning and achievement, including other types of learning (such as participation in cocurricular activities) that have traditionally been difficult to recognize. Like prior similar innovations such as mastery learning, competency-based education, portfolio assessment, and eportfolios, digital badges have the potential to both transform and disrupt education. The introduction of these assessment-oriented innovations requires educators to more systematically consider the intended learning outcomes. This articulation of outcomes, in turn, pushes educators to look beyond the *practices* of teaching to think about the *processes* of learning. Arguably, digital badges have the potential to disrupt education even more than these prior innovations because they have the potential to disrupt current funding models, allow the "unbundling" of courses, and allow for recognition of forms of learning that traditionally have not been recognized.

Many of the early uses of digital badges within existing gamification schemes or formal school contexts overlooked a key field in the Open Badge Infrastructure (OBI) metadata standards. Particularly for readers of this *Field Guide to Eportfolio*, a crucial element of the OBI metadata standards is the *evidence* field, a unique URL (universal record locator or web address) that links to additional web-enabled information that can support the claims that the badges make. For example, the evidence link often points back to completed student work and sometimes a discussion of that work with peers, instructors, and the public. As Casilli and Hickey (2016) argued, the fact that badges can contain this web-enabled evidence and can then circulate in social networks is one of the most transformative (and therefore disruptive) aspects of digital badges. But unlike other OBI 1.0 assertions (like *issuer* and *earner*), evidence is an optional field. Many of the initial open badge systems did not elect to include an evidence link, simply relying on the context of the game or institutional reputation to support whatever claims were made by the badges. Others simply linked to a generic page of information that was the same for all badges (e.g., a syllabus or detailed account of the learning activity). One particularly common early practice had digital badges automatically awarded to every individual who attended a conference or completed a university course (a practice that came to be known as "carpetbadging").

The early scarcity of evidence-rich badges was presumably not unexpected by the leaders at MacArthur or Mozilla who established the OBI standards. The early badging efforts at P2PU reaffirmed the challenges that many eportfolio proponents have encountered: It is difficult to establish convincing web-enabled evidence that will endure for the life of the credential. What proponents of badges may not have expected was the repercussions that this explosion of evidence-free badges (and particularly "claim-free" badges) had on the nascent movement. Without claims

and evidence, badges are essentially extrinsic incentives that are arbitrarily related to a badged learning process or outcome. Such rewards can "overjustify" learning that is already intrinsically motivating (Lepper, Greene, and Nisbett 1973). Extrinsic rewards have been shown in dozens of studies to undermine intrinsic motivation, deeper learning, and subsequent free-choice engagement (Tang and Hall 1995). While scholars continue to debate the consequences of extrinsic rewards, many of these early digital badging practices helped stoke widely-cited skepticism (e.g., Jenkins 2013; Resnick 2012) and outright opposition (Kohn 2014). (For more on this issue, see Hickey 2014.)

In response, proponents of open badges redoubled their efforts to find ways to include convincing web-enabled evidence in their badge systems. It is worth noting that among the twenty-nine grantees in the 2012 Badges for Lifelong Learning Initiative, two of the most highly successful projects (still thriving in 2015 and generating evidence of badge-related admissions, internships, and other opportunities) were organized around the creation of web-enabled media. In the UK, Supporter to Reporter (S2R) built its badges into a sophisticated web-based system for supporting schools and football clubs to foster sports journalists; in the US, the Corporation for Public Broadcasting's News Hour Student Reporting Lab (SRL) built equally sophisticated web-based badges for posting news stories, videos, and reflections in partnership with high school media teachers and local public broadcasting stations. Both projects used badges to complement student-generated media projects.

Rather than directly associating the badges with course credit, the badges were more loosely coupled with both the media projects and the courses or curricular activities in which the projects were created and refined. Importantly, this allowed the badges to serve multiple functions. In the school context, collaborating teachers could decide if and how they would award course credit for particular badges. Learners typically completed the web-based S2R curricular activities after school and/or at the sporting club. In this case, the criteria for the badge, the various comments on video projects, and the other badges on the earner's S2R home page provided evidence that the work was genuine and indicated aspects of a collaborative project the individual earner had carried out. This is sufficiently compelling evidence for teachers to award course credit, typically in the form of "extra credit" in relevant classes. In contrast, the SRL curricula was more classroom-based; to earn each badge, students would submit each completed project and reflection on the website for review by their teacher, who could approve for a grade or request further work.

For the more advanced badges, the teacher's approval automatically notified a producer at the local affiliate station, who had to review and approve the video project before the badge was awarded. At the end of each semester, the system automatically sent an email to the school principal and station manager with the names and links to all the final "career-ready" badges that had been earned. Significantly, in both badge systems, earners could readily share their badges over email or social networks. The badges contained the detailed criteria that the students had met and links to the video projects; in addition, earners could add as much or as little information as they wished. Of course, the earners were free to indicate what if any grades they earned. But because the earner elected to provide this information, it was not subject to the privacy requirements that protect official grade information.

Implications for Eportfolios

Digital badges were sometimes mentioned along with eportfolios within the highly touted wave of disruption associated with MOOCs (Miller 2012). But the relationship between the badge and the eportfolio was not clear at the outset and is continuing to evolve. Of course, both are used to recognize learning and accomplishment, and both have obvious formative potential for supporting and motivating learning as well as obvious summative potential for providing evidence of prior learning and potential for future accomplishment. However, eportfolios, by their very nature, are bound to a very particular kind of assessment practice, the well-established practice of *portfolio assessment*, where learner-created artifacts and possibly reflections and discussions of those artifacts are presented as evidence (Paulson 1991). There are many ways to develop a relationship between the eportfolio and badges:

- Designing authentic assessment badge claims for learners can support badge earners in contextualizing, integrating, and applying their learning in formal and informal experiences. Authentic learning is assessed under real-life conditions or situations (see Chapter 3). A badge can be issued in front of a curated portfolio of evidence or serve as evidence inside an eportfolio as an artifact, curated alongside other forms of evidence to create a narrative. The term evidence, therefore, has a range of meanings when discussed with digital badges and eportfolios. Badges should include (1) evidence of achievement if it has been issued with credible criteria, (2) evidence that an issuer has warranted and credited their achievements, and (3) optional evidence linked to the badge that signifies what the earner has demonstrated for the badge via a link in the metadata to a curated eportfolio. The badge metadata contains all of the verifications and certifications that sit behind the image file representing the badge.

- Building badges into the current learning and assessment ecosystem can ensure that the badge is credible and valid from the outset as it builds on current practice (see this case study from Dartmouth College). Successful implementation of badges together with eportfolios of evidence requires clear and explicit rubric and standards for learning as well as a robust platform for presenting them. AAC&U's Integrative Learning VALUE Rubric provides a set of criteria that can be used for designing new standards such as connections to experience, connections to discipline, transferability, integrated communication, reflection, and self-assessment.

- Evidence-based approaches to assessment include aligned learning outcomes, improving student learning and engagement, providing clear and explicit information to all stakeholders, accountability, validity, and credibility. Approaching badges in higher education with a similar framework highlights what a student can do for a range of stakeholders through verified evidence in curated eportfolios (Coleman 2015).

- A badge earner can be awarded and issued a badge, and the reader of the badge (an employer, for example) can click inside to see the criteria and evidence of achievement in the metadata. This verifiable information demonstrates to a range of difference audiences what the badge earner knows and has achieved, which a résumé or transcript may not capture. Digital badges in this instance can serve as evidence of achievement, competency, and/or mastery.

- Badges issued using analytics or online data as evidence of participation have been a source of division among badge issuers. Some critics of these badges are concerned that

they may decrease the value or currency of badges in the wider higher education ecosystem. According to Sheryl Grant (2014, 3) "Our assumptions that participation does not warrant a credential says more about our belief that learning is limited to performance on exams and assignments." An automatic badge acts as a digital identifier of evidence for both the individual and the community, indicating an achievement of professional learning for a range of stakeholders. Automatic badges such as these can be used to demonstrate skills, knowledge, and capabilities when curated among learning artifacts in eportfolios. There are many possibilities for learning analytics and designing learner pathways through automatic badges.

Conclusion

As Randy Bass (2010) has noted, "Eportfolios are a space for creating an identity (as a student and as an emerging professional) that links the experiences of the traditional or formal curriculum with the pedagogical and cocurricular experiences that engage and transform learners" (NPN). Open digital badges support this characterization of eportfolios by externally demonstrating endorsement of a skill, capability, or competency while at the same time, for the earners themselves, signifying the achievement of a milestone to enrich and motivate their learning and their lives. At the foundation of both eportfolios and badges are curated collections of artifacts and evidence that allow ongoing validation and recognition of professional skills and capacities. As examples of how evidence of learning can be recorded and warranted by a range of stakeholders over time, these digital representations serve to inform and incentivize innovation in more traditional forms of documentation such as the academic transcript.

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8. Transition to Career and Career Development

Julie K. Ambrose, Kelly A. Delaney-Klinger, Kristina Hoeppner, Leanne Ngo, and Patsie Polly

Building student awareness of career and employability skills is strongly aligned with higher education graduation outcome goals. Instructors should make it explicit to students how identity formation and the transition to becoming independent learners are central to career development. The implementation of eportfolio pedagogy is a mechanism for encouraging student career awareness and professional skills building, which facilitates an outward-facing graduate identity to future employers. Our multidisciplinary team has identified four key areas of career development that are foundational for student career awareness and employability skills building: stakeholders, work-integrated learning, branding, and professionalism, all of which are integral to the attributes of graduates from institutions of higher education (see Figure 1). Most, if not all, of these attributes are continually cited by employers as the most essential competencies. The development of these graduate capabilities can be facilitated using eportfolio pedagogy to support reflective practice and evidence-based methods of demonstrating career learning for future employability.

Keywords: career, career development, branding, professional development, professionalism, work-integrated learning

Overview

The concept of transitioning from a dependent learner to an independent learner is central to career development learning. As students become independent learners, they begin to shape their identity and the way they want to present themselves to future employers. Eportfolio pedagogy is a mechanism for supported learning of career awareness that facilitates that outward-facing graduate identity. As shown in Figure 1, this chapter describes four key areas: stakeholders, work-integrated learning, branding, and professionalism—with associated elements that underpin career development. Each of these areas addresses graduate attributes that can be developed using eportfolio pedagogy to support reflective practice and evidence-based methods of demonstrating career learning and graduate employability.

Figure 1. Process for supporting career thinking and development using eportfolio pedagogy

Stakeholders
› Higher education
  › Students
  › Educators
  › Senior executives/
    administrators
› Employers

Work-integrated learning
› Authentic
  experiences
› Assessment as
  work experience

Branding
› Self-promotion
› Promotion
  of students
› Institutional
  promotion

Professionalism
› Academic skills
› Employability skills
› Lifelong and
  lifewide learning
› Resume vs. portfolio

Graduate attributes

Eportfolio

Career thinking and development

Stakeholders

Internal: Higher Education

Students

Eportfolios provide students with opportunities to reflect on their strengths and challenges that develop their attributes for becoming employable graduates. In addition, eportfolios provide multiple opportunities for students to display evidence of their learning and achievements throughout their studies. These include their professional experiences that can move beyond their degree as they transition into their chosen careers or further studies. These employability skills include, but are not limited to, professional judgement, leadership, digital literacy, self-

management, creativity and innovation, communication, teamwork, problem solving, social responsibility, and ethics (Watty et al. 2016).

Educators

Eportfolios provide educators with a holistic view of students' learning, experiences, and development beyond individual units of study. They extend the view to the entire study program, giving students an opportunity to understand and contextualize their learning experiences in terms of graduate attributes and employability skills. As part of this process, students curate their evidence of learning and select and organize their achievements. They identify skill gaps through review of and reflection on their eportfolio content.

Thus, educators can provide rich personalized learning guidance beyond classroom work. When observing students engaging with eportfolio practice, educators begin to value the usefulness of eportfolios in supporting the process of students creating their own evidence of achievement to demonstrate their employability skills.

Senior Academic Administrators

An eportfolio is one approach that educators as facilitators of learning can use to assist students in navigating their way through the complex process of capturing their learning for presentation to future employers. It is important for educators to receive professional development and continued support in changing their teaching practices to include eportfolio work (Making Connections National Resource Center, n.d.). Senior executives and administrators should be prepared to support professional development for faculty.

External: Employers and Professional Bodies

Eportfolios can assist employers with a range of activities, including recruitment and appraisal processes, by understanding the job applicant's development in relationship to her employability skills and graduate attributes. They add value by providing a richer picture of the applicant and potentially streamlining the recruitment and appraisal processes due to the media rich digital affordances of the eportfolio tool (Ambrose 2013). Eportfolios also assist with identifying professional development and career planning opportunities while at the same time providing the platform for students as future employees to evidence and showcase their ongoing professional activities for accreditation purposes. In most cases, employers do not demand a portfolio as part of the hiring process, although many welcome them or would use them if they had access (Ambrose 2013, Hart Research Associates 2013; Lehigh Carbon Community College 2015a; Lehigh Carbon Community College 2015b; Ward and Moser 2008). Currently, an eportfolio often distinguishes candidates from their "competition" in a positive manner (LCCC eportfolio 2015b).

Work-Integrated Learning

Educators and Learners

Work-integrated learning (WIL) for educators and learners refers to learning that takes place in the context of workplace requirements and capabilities. When thinking about WIL, it is typical to think traditionally in terms of internships within workplaces to gain skills and experience appropriate to the job. While these are very valuable for building work experience and skills related

to work practice, they may come too late in a student's development of career thinking. Recently, internships as coursework provide mechanisms for WIL (Gordon et al. 2015, 12:46).

Career Learning and Teaching

There are multiple interrelated elements to consider when scaffolding tasks for students as they think about career learning, including authentic experiences, assessment, graduate preparedness, and professional development. Educators consider the authenticity of assessment tasks that ask students to develop discipline knowledge and associated skills. The usefulness of assessment tasks as a form of "work experience" should be considered when implementing WIL for students, as many such tasks are formulated to build skills and capabilities for future graduate employability (Polly et al. 2013; Polly et al. 2015).

Supporting WIL

Why Use Eportfolios?

Students often struggle to make connections between learning outcomes from coursework, WIL, and career development. Eportfolio pedagogy, when effectively applied, can support students in reflective practice, facilitating their thinking and development of career learning (Coleman et al. 2012; Yang et al. 2015).

How Can Educators Use Eportfolios?

Educators have considered how eportoflios should be approached. One effective method (especially for the sciences) has been to link an eportfolio as a reflective space connected to authentic assessment tasks that build skills that could be used for prospective career paths (Polly et al. 2013; Polly et al. 2015).

What Is Important When Implementing Eportfolio Pedagogy?

Educators ask students to reflect on their experiences and skills development when engaging with assessment tasks. It is important that educators give students permission to reflect in their own time and in their own eportfolio space as part of creating their outward-facing graduate identity.

How Are Eportfolios Used?

Eportfolios are a valuable way of facilitating reflective practice and allowing professional-personal growth. They are useful for evidence-based display of skills development and career learning. Most importantly, employers can now observe and evaluate students as potential employees by reviewing eportfolios that are submitted as part of a job application.

Branding

What Branding Means to Educators and the Learner

Personal branding involves identity building and self-promotion (Edmiston 2014). Critical components that university faculty and career center professionals provide are the educational processes that integrate reflective practice into academic and career development courses (Kahn, Landis, and Scott 2015) and facilitating students' self-awareness and identity thinking (Turns et al. 2012). Branding is enhanced when students develop metacognitive skills that help them understand and discuss not only what they learn but also how they can apply their learning in other

contexts. Eportfolios provide a platform for explaining and showcasing their personal and professional brand.

Associated Elements and Their Interrelationship

Faculty and staff should educate students on appropriate portfolio content and "the need to achieve a balance between personal (perhaps to give a sense of an individual's personality) and professional expression" (Turns et al. 2012, 11), helping them avoid "the inclusion of materials that may reduce [their] marketability" (Hanum et al. 2016, 5). Eportfolios also provide students with a means to show evidence that they have met academic goals and obtained employability skills (Association of American Colleges and Universities, n.d.; National Association of Colleges and Employers, n.d.; Ford, Lucas Hartley, and Lumsden 2008). This evolution of eportfolios as a career development and branding tool has mirrored the evolution of the Internet, Web 2.0/3.0, and social media technologies (Hooley 2012, Barrett 2009). Barrett's concepts of lifelong and life-wide learning demonstrate the multifaceted, interrelated technologies that impact one's brand.

Importance of Eportfolio Pedagogy and Thinking to Support Branding

What's in It for Me?

Although the eportfolio "allows students to construct professional identities and to display narratives significant to potential employers" (Graves and Epstein 2011, 346), a major challenge is convincing students that establishing their professional brand is of personal value to them. Hanum et al. found that despite most students and faculty agreeing that eportfolios can increase marketability and self-confidence, certain students need to be forced to create one because they do not realize its importance (2016). Higher education institutions are often the drivers of eportfolio use and branding, educating students as well as other stakeholders about their purpose and value (Australian ePortfolio Project 2009).

Where Do We Go from Here?

As employer knowledge and use of eportfolios increase, we can anticipate a shift from the eportfolio being a nice "add-on" in the candidate evaluation process to being an expected element for candidates to have as part of their digital identity to demonstrate complex twenty-first-century employability skills.

Institutional Promotion of Students

Institutions may opt to promote their students' skills and accomplishments by featuring them on the university website and at events like job fairs, recruiting events, networking nights, eportfolio showcase events, and conferences. Further, institutions can align their students' portfolios with their own brands at the development stage by using themed portfolio platforms and by aligning their brand to the institutional learning goals (B. Gordon et al. 2016, 1:55). For example, Texas Christian University calls its portfolio site "FrogFolio" to show the close relationship to the school and to foster identity with its brand.

Institutional Promotion

Students, graduates, and employees of a college or university contribute to the institutional brand when they engage online using, for example, an institutional URL, logo, or email address. Institutions should consider the extent to which they want to facilitate the connection between their

students and the institutional brand, as this can create positive or negative associations. Increased control can be achieved by including a credentialing option for eportfolios using digital badges, a topic further discussed in Chapter 7 in this volume. Eportfolios also provide a means for institutions to promote and capitalize on their constituents' positive brands.

Professionalism

Academic and Employability Skills

Certain professions, such as in K–12 education, have long required prospective teachers to document their capabilities in a written portfolio. Currently, changes in teacher certification are mandating the use of eportfolios as a much more flexible and interactive tool for displaying professional credentials. In addition, research suggests that principals and other hiring bodies are interested in the use of targeted techniques when employing new teachers (Hartwick and Mason 2014). Other professions also have begun to utilize the eportfolio as a tool for students completing professional training and education. For example, students in business (Graves and Epstein 2011), engineering (Halstead and Sutherland 2006; McNair et al. 2006), and nursing (Karsten 2012) have been using the eportfolio to evaluate, demonstrate, and reflect upon their professional credentials. Eportfolios offer tools to better retain, manage, and consider evidence from educational and practical experiences.

Lifelong and "Lifewide" Learning

Many professionals are expected to regularly assess their qualifications and plan for continuing professional development. The eportfolio is extremely helpful in collecting evidence of continued professional growth and learning as well as for displaying it for licensing or certification renewals. For example, a variety of medical professionals use eportfolios to support important regulatory requirements: nurses (Andre 2010), physicians and surgeons (J. A. Gordon and Campbell 2013), dental professionals (Kardos et al. 2009), and engineers (McNair et al. 2006).

Résumé versus Portfolio

Résumés and application forms remain the standard for individuals applying for employment. Organizations use these documents as a starting point for identifying qualified applicants. However, the number of employers using social media or other profiles to screen job candidates is increasing. A survey conducted by the Society for Human Resource Management (2016) found that 43 percent of the organizations surveyed admitted they relied on online searching or public social media profiles (e.g., Google, LinkedIn) to screen job candidates. When this survey is combined with other studies (e.g., Ambrose 2013), it would appear that although eportfolios aren't likely to replace résumés soon, they would be welcomed as evidence of an applicant's qualifications and professional standing.

Conclusion

The four key areas of career development of *stakeholders*, *work-integrated learning*, *branding*, and *professionalism* are foundational to building graduate capabilities and employability skills. Development of the eportfolio as a mechanism for demonstrating professional skills and capabilities is a viable way for graduates to become visible to future employers. Furthermore,

student learning about how to curate and display evidence that demonstrates development of graduate capabilities and attributes can be integrated with career thinking as students begin their professional journey with a final destination of becoming employable.

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9. Learning Analytics and the Learner

Ellen C. Caldwell, Carra Leah Hood, and Nancy J. O'Laughlin

During the last decade, eportfolios have become an increasingly common and valued tool in higher education. Eportfolios collect evidence of student learning and academic achievement while also generating a large amount of data about student learning behaviors. This chapter considers the mammoth task of collecting, analyzing, and using eportfolio data and learning analytics through institution-wide collaboration with stakeholders who have the expertise and technical competence to extract, analyze, interpret, and effectively use data.

Some core questions guiding this section include:

- What are meaningful data?

- What are we looking for and what do we do with the data we find?

- Are students who spend more time editing their pages, creating new content, and displaying more engagement more likely to be retained?

- Do learning analytics data inform process and practice? How can this kind of data be leveraged to improve teaching and learning (Dringus 2012)?

Keywords: learning portfolio, assessment portfolio, assessment data, learning analytics, summative assessment, formative assessment

Introduction: Using Eportfolio Data

Research over the past ten years attests to the value of eportfolios as tools for the display of student work and the assessment of student learning. As rich data repositories, eportfolios can be directly mined for evidence of students' academic achievements and used to identify areas needing improvement. Eportfolios also generate a large amount of data about student learning behaviors. Both types of eportfolio data serve to inform course and program design as well as university engagement efforts, retention strategies, and completion agendas. While eportfolio programs can range from smaller, course-based programs to institution-wide programs, the most effective analysis of eportfolio data that benefits student learning requires involvement of all institutional units and divisions, especially those constituents who have the expertise and technical competence to extract, analyze, interpret, and effectively use data.

Whether housed in the learning management system (LMS) or on other digital platforms, data generated from eportfolios serve a variety of purposes (Table 1). Assessment data, for instance, serve some purposes while data about student learning behaviors serve others. These kinds of data can benefit students by supporting their professors' efforts to improve the educational experience (Sclater and Bailey 2015). Learning analytics—the practice of collecting data, discerning trends, and predicting students' progress as learners—can provide professors with the information they need to make timely interventions (United States Department of Education 2012). In this way, learning analytics processes provide data that support formative assessment.

Table 1. Types of Eportfolio Data

For Learning and Assessment (Evidence)
Artifact-specific reflection content General reflection content Rubric scores Artifacts (student-selected samples) Feedback (student, instructor, external) Comments (student, instructor, external)
For Learning Analytics (Behaviors)

Total files uploaded into eportfolio
Number of times résumé (page) viewed
Hit counts for student eportfolio pages*
Number of times student logged into their eportfolio
Additionally, Google Analytics** can provide:
      Total time a user spends on a site
      Time a user spends on each page and in what order those pages were visited
      Which internal links were clicked (based on the URL of the next page view)

There appears to be a strong correlation between the number of times a certain student's electronic portfolio pages are visited and that student's decision to stay or withdraw from their college (Aguiar et al. 2014). *** Google Analytics tracking snippets can be used with most websites, enabling students to track information on the use of their eportfolios, whether created using a free service such as Google Sites, Wordpress, Weebly, or Wix or an institutionally supported program. However, this data requires knowledgeable interpretation (Google 2016).*

Transforming Data into Action

Using Learning Analytics to Support Students and Drive Institutional Support

The 2013 Horizon report on higher education emphasizes the importance of focusing learning analytics data collection and use to achieve student-centered goals. The report argues, for instance, that "learning analytics leverage student-related data to build better pedagogies, target at-risk student populations, and to assess whether programs designed to improve retention have been effective and should be sustained" (Johnson et al. 2013, 24). Dringus (2012) adds that effective use of data (that raises awareness and leads to meaningful action) begins with good questions that tease out information not readily available via other methods. In most cases, learning analytics can probe questions about student performance that evolve from institution-specific contexts and situations.

Eportfolios can help to generate these kinds of data because the learning analytics tool in educational eportfolio platforms tracks students' behaviors while they work. Research indicates that "undergraduate students with eportfolio artifacts had significantly higher grade-point

averages, credit hours earned, and retention rates than a matched set of students without eportfolio artifacts" (Knight, Hakel, and Gromko 2008, 1).

Learning and Assessment Portfolio Data

Over the last decade, eportfolios have become an increasingly common feature of college courses across the curriculum, in capstone experiences (to integrate knowledge and skills), other high-impact practices, and as institutional graduation requirements. Some eportfolios facilitate student learning and offer opportunities for formative guidance and scaffolding; these are considered learning portfolios (Zubizarreta 2004). Other eportfolios, known as assessment portfolios, are intended for summative evaluation or institution-level assessment of learning outcomes.

No matter their function, eportfolios serve as a space for students to archive their course work, repurpose assignments, reflect on their progress as learners, and transform their learning experience. A learning portfolio offers a student and professor the opportunity to view work in progress and to engage in continuous revision and improvement. An assessment portfolio presents a snapshot of an individual student's course work at a moment in time. An instructor might not grade a learning portfolio; however, an assessment portfolio will be evaluated as evidence of student learning in the course or program, or over time at the institution.

University Buy-In

When eportfolios are used for course, program, or institutional assessment, the assessment process generates qualitative or quantitative data (depending on the method and instruments employed) to capture information about student learning. Because of the time and labor commitment involved, successful and ongoing eportfolio assessment requires buy-in from both students and faculty (Provenzis 2012); consequently, the purpose for teaching with eportfolios needs to be clearly communicated, administratively supported, and universally valued. Faculty compensation (or other reward structure) and support for pedagogical practices associated with eportfolios need to be incorporated into the implementation process. Both will improve the chances for cross-campus buy-in.

Eportfolio Data-Mining and Interpretation

Although studies have established and demonstrated eportfolios' transformative potential for higher education learners (Batson 2011; Cambridge, Kahn, Tompkins, and Yancy 2001; Peacock, Murray, Kelly, and Scott 2011), displaying and analyzing this data effectively can be challenging. Learning and assessment portfolios result in a variety of data analytics and assessment outcomes that are both summative and formative, qualitative and quantitative. Furthermore, "portfolios achieve a goal that many other assessment methods can not [sic]. They change the student role in assessment from passive research subject to active participant as students are called upon to select samples of their classroom and cocurricular work products or artifacts for the portfolio and (perhaps most importantly) to reflect upon why these artifacts were selected and how they demonstrate learning" (Palomba 2002 cited in Knight, Gromko, and Hakel 2006, 3).

Reading the Data

With continued adoption of eportfolios and their wide variety of uses, data can now be accumulated from freshman to senior year. These data provide the university, department, faculty member, or student concrete evidence of learning and of ways to use eportfolios to display outcomes achieved through high-impact practices such as first-year seminars, experiential learning opportunities, or capstone courses.

For example, in a first-year seminar, the use of a learning portfolio can be a pedagogical technique to engage students in metacognitive reflection and application of their learning beyond a single course or outside of the classroom while receiving feedback from a faculty member (Buyarski and Landis 2014, 50). As a capstone activity, the eportfolio can provide students with the opportunity to synthesize their learning creatively and to display it through projects that integrate all areas of their life experiences (e.g., coursework, cocurricular activities, clubs, internships, and work) (Richard-Schuster et al. 2014, 136). The eportfolio process permits students, wherever they are in their own development, to reflect on their past learning, self-evaluate their current learning, and make informed and intentional choices for future learning. Whether used for assessment or as a formative gauge of student learning, eportfolios have the potential to provide significant information on learning outcomes to the institution, program, faculty members, and students. This can be maximized if students begin using eportfolios in the first year of college (Buyarski and Landis 2014, 50).

There is evidence that using eportfolio data is a feasible means for predicting college retention (Aguiar et al. 2014) and supporting transfer student success (Singer-Freeman, Bastone, and Skrivanek 2014). The work of campus teams in the Connect to Learning project (C2L) suggests "thoughtful eportfolio practice can help build student success (as measured in 'hard outcomes' such as retention and graduation) while also advancing reflection, integration, and 'deep learning'" (Eynon, Gambino, and Török 2014, 95).

Audience and Interpreters of Data

It is important to tailor the results and findings of the data to the needs of specific stakeholders. Evidence that is compelling to a dean or administrator may be different from evidence for faculty or students. Some users expect to see numbers, or quantitative statistics, while others are more persuaded by qualitative data. This should be taken into consideration when determining how eportfolios and their data will be used. Incorporating rubrics (such as the VALUE rubrics) to assess artifacts within a portfolio or the portfolio itself should be considered. As Buyarski and Landis warn (2014, 49), because the evidence used for assessment is actual student work, "eportfolios provide a view of learning that is not available through traditional methodologies such as student surveys and exams."

When administering student, departmental, or institutional portfolios, it is imperative not just to collect data but also to analyze results and transform them into data-driven questions and data-informed action plans. Beyond administrators and faculty, universities should empower the learner to interpret the learning analytics and data as well (Kruse and Pongsajapan 2012). Kruse and Pongsajapan (2012, 4) further argue:

> To reimagine analytics in the service of learning, we should transform it into a practice characterized by a spirit of questioning and inquiry. So an alternative to the existing

intervention-centric approach to learning analytics might involve the student as a co-interpreter of his own data—and perhaps even as a participant in the identification and gathering of that data.

While research in higher education shows that students are often treated as "passive consumers" of information rather than active, engaged, and autonomous thinkers (O'Keefe and Donnelly 2013; Neary and Winn 2009, 1), what Kruse and Pongsajapan propose falls in line with the underlying goals of active, engaged, and transformational learning. Such learning occurs only when students reshape the way in which they learn in order to situate themselves in that field (Batson 2011). Table 2 provides examples of how a few eportfolio platforms address and empower users and stakeholders to work with portfolio learning analytics and data.

Table 2. Example of Eportfolio Platforms and Their Data

Example 1
PebblePad: Learning Analytics for Student Self-Directed Learning
One eportfolio platform, PebblePad, has developed a tool called Flourish. As cofounder Shane Sutherland describes, "One of its jobs is to act as an aggregating space for all of the learners' grades and feedback to allow them (sometimes with the support of a coach/advisor) to make sense of their own progress and achievement" (Sutherland 2016). Another part of the PebblePad platform, ATLAS, serves as the assessment space. Here, learners can submit work early so that they can continue to edit and progress while receiving ongoing feedback and grades. Then at the deadline, it is submitted and locked for summative assessment. During this time, reports can be accessed at any time. La Trobe University faculty members Michelle Newton and Yangama Jokwiro shared their experiences in the video testimonials linked above (Newton 2016; Jokwiro 2016).
Example 2
Digication: Learning Analytics for Evaluation of Student Learning Narratives
Learning analytics in eportfolios can track learning behaviors over time in such a way that they document students' knowledge-making activities. According to Digication, eportfolios that contain learning analytics permit evaluators to read students' learning narratives. Thus, "by mining the text and other media that comprise student eportfolios, educators/researchers have the ability to capture deep and rich qualitative data that tell the story of individual learning processes and knowledge development. The technology exists that will enable these data—generated by students through both systematic elicitation (using specific templates, prompts, and open-ended survey questions) and free-flowing texts (student-ideated essays, narratives, responses)—to be collected and searched, and even coded and themed. Using such strategies as word counts, key-words-in-context (KWIC), taxonomies, cognitive mapping, and others, automated text-analytics offer the ability to quantify otherwise qualitative data. . . . The combination of quantitative and qualitative data collected through both user- and text-analytics generated from student eportfolios provide powerful evidence for classroom, program, and institutional decision-making" (Yan et al. 2016).

Privacy and Ownership

With so many different users and uses of eportfolios, ownership of eportfolio content is an important consideration. Well-developed security can prevent unauthorized access to private personal data. Usually eportfolios are student-owned. When eportfolios are used for institutional assessment, the issue of student ownership is often addressed in a policy, requesting students to sign-off or permit the anonymous use of their work (Acker 2005). Often, some type of informed consent form or acknowledgement of digital terms of agreement are distributed to students to gain permission for the eportfolio to be used for institutional research. As universities implement learning analytics, it is important for them to develop their own policy about data collection and interventions reflecting their campus' culture, goals, and aspirations (Campbell 2012).

Conclusion: Recommendations for Strengthening Data Usage

Implementing robust portfolio programs across an institution requires buy-in at all levels, from the top down and bottom up. Students, faculty, staff, and administrators must all see and believe in the benefits of using eportfolios and mining their data. Faculty development is a key component by helping train faculty with portfolio technology and implementation so they feel comfortable teaching with eportfolios, instructing students how to use them, and even monitoring their own portfolio data during the course. In particular, learning to use analytics to intervene early and formatively can lead to improved student learning while also having positive effects on retention, GPAs, and degree completion.

Faculty and administrators do not necessarily know how to collect, organize, and analyze data, nor does everyone know how to undertake meaningful actions from the data, so it is particularly important to nurture and teach a group of dedicated core constituents. When assessment data and learning analytics are collected and studied, sharing applicable data with all invested parties is also key to sustaining interest and momentum. This requires understanding which stakeholders to share data with: institutional data with administrators, pedagogical information with faculty and students, and qualitative assessment data with employers and community members. Many universities have information technology departments and institutional effectiveness offices with expert statisticians and data miners who can assist in analysis while putting existing institutional resources to use. Below, in Table 3, two case studies detail the ways in which four institutions met challenges associated with implementing eportfolios, including interpreting learning analytics data, facilitating student and faculty buy-in, cultivating change agents, and using eportfolio data to spark other types of institutional reforms.

Table 3. Eportfolio Case Studies

Case Study 1 Learning Analytics Data
A study at Bowling Green State University (BGSU) reveals the types of data a learning analytics tool can track. "The software's reporting capability allows the following elements to be counted for each participant: showcase artifacts (artifacts in the showcase version of the student's eportfolio), matrix artifacts (artifacts in the matrix version of the student's eportfolio), artifact specific reflections, general reflections, total files uploaded to the eportfolio, events posted to the student's eportfolio calendar, bookmarks created in the eportfolio, number of résumé uploaded to the eportfolio, and number of times résumé were viewed (by anyone)" (Knight, Hakel, Gromko 2008). The tool cannot analyze content, the proper role of assessment, but it can gauge the number of times a learner takes a particular learning-directed action.
Case Study 2 **The Power of Institutional Buy-In**
LaGuardia Community College, The City University of New York provides one example of an institution that has fully integrated learning and assessment eportfolios into the fabric of teaching, learning, and reporting. Provenzis (2012) argues that buy-in at LaGuardia has required "ensuring that the eportfolio directly benefits students," adding that "professional development seminars help LaGuardia faculty use the eportfolio as a pedagogical tool to support integrative learning." Students must be guided to practice metacognition throughout their time at LaGuardia. For instance, "reflecting on their learning across disciplines and semesters, students are encouraged to make connections and consider their own growth and change. Creating digital self-portraits, students craft new identities as learners and take greater responsibility for their work" (Provenzis 2012). According to Eynon (2009), LaGuardia "outcomes data show a strong correlation between taking eportfolio intensive courses and pass rates, next-semester retention, and progress toward graduation."

Case Study 3
Locating University Change Agents

When Portland State implemented institutional portfolios, they recognized that change agents were key to a program's success. "Literature on organizational change emphasizes not only the importance of clear, directed leadership but also the critical role of individual change agents in defining, describing, and communicating change to the constituents" (Ketcheson 2009). Darren Cambridge argues for the important shift of responsibility involved in such implementation: "Eportfolios are hard to implement at scale in a way that embraces their transformational potential because they require not just changes in practice but changes in responsibility" (Cambridge 2012, 52–53). This indeed is a lofty responsibility for institutions to take on, and studies have shown that frustration arises with various constituents, such as faculty, when data and results from their portfolio practice are not shared, analyzed, and used to implement improvements (Swan 2009). Conversely, recent studies show that excitement and enthusiasm result when analytics are used to empower administrators and faculty (Kruse and Pongsajapan 2012).

Case Study 4
Improvement Data

A 2006 university-wide portfolio initiative at Clemson University was implemented to assess the recent revision of the university's general education curriculum. In one of the key takeaways from this initiative, Clemson notes that the portfolios offered insight into what its students didn't know as much as it did to what they did know. "We point out that the eportfolio is a lens through which we gain a richer picture of our students' understanding of the general education competencies. With this understanding, we are empowered to make the necessary improvements to the undergraduate curriculum" (Ring and Ramirez 2012). Applied more largely, Clemson's lessons can serve as a microcosm, showing that institutional portfolio data and analytics may shed light on areas of improvement as much as on areas of accomplishment.

In a 2016 post for *Educause Review*, Gerd Kortemeyer argued that two worlds of learning analytics, course-level and institution-level, are growing apart, potentially furthering the disconnect between faculty and administration. The four institutions profiled in the case studies above suggest that disconnects can be bridged and that eportfolios can provide meaningful data for rebuilding bonds between institutional populations. For instance, Kortemeyer noted many of the setbacks, including the financial burden, that institution-wide analytics face, but he also advocated for improving the way we interact with and analyze student data: "In the case of learning analytics, the personal touch—supported by the data collected about students—could make the real difference in their success" (2016). Robust eportfolio programs can help to bridge this growing divide, offering the learners, faculty, and institutions rich analytics and the personal touch through thoughtful reflection, intentional selection of archives, and greater autonomy for learners as they shape, own, and use their data to grow and learn.

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10. Faculty Eportfolios: Teaching and Learning and Professional Development

Heather Caldwell, Gina Rae Foster, and Gail Ring

Faculty eportfolios are as diverse as the scholars who create them and include a range of activity artifacts comparable to student eportfolios. Like their student-created counterparts, faculty eportfolios provide a bridge between institutional needs for assessment and individual and peer needs for enhancing and documenting professional achievements. Recent reports indicate that faculty eportfolios contribute to improved learning outcomes (O'Keefe and Donnelly 2013; Eynon, Gambino, and Török 2014) and improved institutional assessment (Hubert and Lewis 2014; Ring and Ramirez 2012). While not enough research into the influence of eportfolios on faculty performance and retention has been undertaken on a large enough scale to provide evidence either to confirm or reject their efficacy (Rhodes, Chen, Watson, and Garrison 2014), anecdotal evidence suggests that faculty use of eportfolios extends and sustains excellence and productivity that directly and indirectly increase student and institutional success (Wetzel and Strudler 2008).

Keywords: scholarship of teaching and learning (SoTL), academic learning, communities of practice, teaching, promotion, tenure

Introduction

Faculty eportfolios are distinct from student and institutional eportfolios in that they primarily focus on enrichment, scholarship, and accomplishments rather than on demonstrating student and institutional success. Faculty most commonly engage in eportfolio development in the following areas:

- scholarship of teaching and learning (SoTL) (research and publication)

- communities of teaching and learning practice (peer mentoring)

- academic learning strategies (implementation and innovation)

- folio thinking (reflective practice)

- professional teaching eportfolios (archive and presentation)

- disciplinary/interdisciplinary research (archive and presentation)

- promotion and tenure eportfolios (evidence of achievements)

These areas can be condensed into two broad categories of eportfolios: those related to teaching and learning and those related to professional development. Both types of eportfolios are the focus of this chapter along with the institutional support necessary for their successful implementation.

Teaching and Learning

In his 2016 interview with Mary Grush, Trent Batson describes eportfolios as "student-owned learning spaces." Similarly, teaching eportfolios might be described as "instructor-owned learning spaces" in which instructors practice and engage in high- and low-risk teaching and learning activities "that persist over time" and generate teaching identities that transcend course or subject assignments.

As such, cognitive science research authenticates the assumption that effective teaching requires more than familiarity and expertise in a particular subject or skill—it requires a commitment to practicing and modeling the very methods requested of an instructor's students (Ambrose et al. 2010; Willingham 2009). Teaching and learning eportfolios offer individual and collaborative opportunities to deepen this commitment and, thus, improve instruction at all educational levels. As such, teaching eportfolios encourage faculty to contribute to SoTL and explore academic learning strategies through eportfolios. Therefore, SoTL eportfolios provide faculty space in which to think through and discuss pedagogy in relation to their disciplines and course assignments, and learning strategy eportfolios ask instructors to duplicate, design, and/or demonstrate effective teaching and learning methods to increase expertise and familiarity.

The literature suggests that SoTL and learning strategy eportfolios support and enhance teaching and learning in three primary areas:

- reflective self-assessment and improvement (Eynon, Gambino, and Török 2014; Lorenzo and Ittelson 2005)

- peer learning and lifelong learning through open educational resources (Catalyst for Learning 2016; Groisbock 2012)

- safe spaces to engage in and demonstrate teaching and learning activities, both traditional and innovative (Hiser 2013; Lorenzo and Ittelson 2005)

Miller and Morgaine (2009,12) explain that "the practices associated with eportfolios—such as designing 'authentic' assignments; using engaging and active pedagogy; periodic self-, peer-, and teacher-formative assessments; and requiring students to reflect on their learning—help to move *both* professors and students into a teacher/learner relationship where 'guiding' really works."

As teaching guides and as mentoring spaces, eportfolios can encourage individual instructors to reflect on their teaching practices and assumptions and to make changes based on these self-assessments. This reflective practice leads to peer conversations and projects that motivate instructors to create open educational resources (OERs) for students and colleagues as part of lifelong learning commitments. Supportive of solitary and group activities, teaching eportfolios can be understood as low-risk projects for documenting and engaging in both familiar and unfamiliar teaching and learning projects.

Professional Development

While research on faculty eportfolio use for professional development is slowly emerging, most current research focuses on student eportfolio use. However, we expect more robust research on faculty portfolio use, especially in the field of professional development, to appear in the near future.

Faculty portfolios can be more than a platform to showcase research and achievements; they present opportunities for collaboration and professional development as faculty collect, reflect, and engage with teaching and research practices. Similar to the experiences of students, the iterative process of reflection and peer or supervisor feedback can positively impact faculty performance and productivity (Hoekstra and Crocker 2015; Amundsen and Wilson 2012).

Professional development portfolios, or portfolios that include professional development, move beyond Seldin's (2009) description of faculty portfolios that showcase and reflect upon accomplishments and instead encapsulate all faculty work to include activities that innovate and facilitate various faculty roles (Steinert 2000). Eportfolios of this type tend to do the following:

- *Build community around professional development,* whether it be through faculty research groups, SoTL, ongoing trainings, or more. Faculty feedback and support build community across disciplines that move beyond the self (Britten and Craig 2006).

- *Demonstrate course development and growth* by examining differing iterations between the same course among colleagues and over time to see how they develop and align with institutional missions and programmatic outcomes (Reece, Pearce, Melillo, and Beaudry 2001).

- *Provide information on what faculty do both within and outside of the classroom* to college administrators, colleagues, current and prospective students, government organizations, community members, corporations, and researchers.

- *Improve campus culture and workplace conditions.* Institutional support increases faculty desire to engage in professional development, and the motivation for participating can increase positive workplace conditions (Hoekstra and Crocker 2015).

- *Help new faculty learn the institution's culture and mission.* They can also encourage "formative development as well as innovation and experimentation" in teaching and research (Seldin 2009, 21).

Disseminating these points to various groups presents possibilities for future partnerships, collaborative projects, and community support. Research suggests that successful professional development initiatives are specific to institutions and their programs and are most often faculty-initiated (Hoekstra and Crocker 2015), provide faculty and technology support (Britten and Craig 2006), include peer and institutional support (Amundsen and Wilson 2012), and offer a range of instructional methods (Amundsen and Wilson 2012).

Institutional Support

Institutional support is critical to successfully implementing portfolios as a means to strengthen and enhance faculty growth and development. While we would agree with Seldin's (2009) statement that eportfolio adoption will be difficult when implemented as a top-down initiative, we argue that without the visible and ongoing support of the administration, long-term sustainable success will be difficult if not impossible.

Though the meta-analysis of research on faculty eportfolios conducted for this chapter found a dearth of research on the topic, we identified the following best practices that can be applied to leverage the success and sustainability of faculty portfolios:

- *Faculty portfolios must be well-defined and consistent with the university mission.* As suggested by Posey, Plack, Snyder, Dinneen, Feuer, and Wiss (2015), the most successful eportfolio projects have a clearly defined and articulated purpose that is consistent with the mission of the institution.

- *Faculty portfolios must provide added value.* Eportfolios should provide value to the faculty; if they are perceived as make-work projects, faculty will be less likely to engage in the process. Perceived usefulness, ease-of-use, and service quality have been shown to significantly influence users' attitudes and satisfaction toward eportfolios (Chen, Chang, Chen, Huang, and Chen 2012).

- *Faculty portfolios must provide multiple opportunities for collaboration and feedback.* As demonstrated by the success of the Catalyst for Learning project, providing faculty multiple opportunities to learn with and from peers and practice further enhances and catalyzes portfolio practice (Bhika, Francis, and Miller 2013).

- *Faculty portfolios must empower not constrain.* The most successful eportfolio programs empower faculty by giving them a voice, opportunities to share new ideas, and the scaffolding necessary to help them achieve their learning and teaching goals. Doing so fosters a culture of continuous learning on the part of faculty that encourages innovation and creativity in the classroom (Ring, Ramirez, and Brackett 2016).

Next Steps

We would add one more item to this list: the inadequate and outmoded faculty reward structure in place at most universities must change. If institutions are to shift the paradigm to embrace a more learning-centered curriculum compatible with faculty portfolios and the pedagogies that accompany them, faculty must be supported in the process and rewarded for their efforts. For example, encouraging and supporting the development of tenure and promotion portfolios provide faculty a tool for reflection, a way to track accomplishments, and a means to engage in a creative use of technology (Danowitz 2012) while demonstrating the commitment of the university to faculty portfolios.

A second, emergent reward strategy parallels the trends in competency-based learning with what might be termed "competency-based teaching" (Cater, Schneider, and Vander Ark 2014). Competency-based teaching includes different types of certification for achieving mastery of teaching competencies such as online education, technology in the classroom, pedagogical theory, course design, learning assessment, and classroom management techniques. These certificates or

badges may be offered by local institutions, publishing and educational companies, or other organizations that claim expertise in particular areas of education.

Encouraging faculty to create eportfolios within well-supported frameworks can help to scale-up a project while providing models that can be emulated. Research suggests that modeling an innovation can help in the implementation process and can "speed-up" the diffusion process (Rogers 2003; Posey, Plack, Snyder, Dinneen, Feuer, and Wiss 2015). We would argue that when faculty create eportfolios themselves, the process provides insights into the complexity of the task, giving them empathy for students who struggle with this same task while providing their students and colleagues with eportfolio models upon which to build. Encouraging and rewarding eportfolio development by all members of the university community helps to create a culture of learning and reflection. This is the power inherent in faculty eportfolios.

We agree with Rhodes, Chen, Watson, and Garrison (2014) that more research is needed on the value and impact of faculty eportfolios and their ability to promote deeper reflection in and on practice (Schon 1983) and to act as catalysts for campus initiatives as suggested in this chapter. Moreover, as accountability increases across our campuses, colleges are increasingly asked to provide evidence of high-quality teaching in addition to evidence of student learning. What better way to accomplish this than through faculty reflection on learning and teaching and the protean nature of faculty roles in higher education?

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Resources and Case Studies

Redesigning Learning

Pedagogy (SoTL)

Leveraging the ePortfolio for Integrative Learning: A Faculty Guide to Classroom Practices for Transforming Student Learning. Candyce Reynolds and Judith Patton. 2014. Centers for Teaching and Technology−Book Library.

Supporting Academic Learning through ePortfolios

A Successful Faculty Development Program for Implementing a Sociocultural ePortfolio Assessment Tool. Rachel L. Perlman, Jennifer Christner, Paula T. Ross, Monica L. Lypson. 2014. *Academic Medicine* 89 (2): 257−262.

Communities of Practice

Native Cultural Identity. ePortfolio. University of Alaska Anchorage. Sheila Randazzo. 2016.

Teaching Eportfolios

EduPass: A Journey to Online Teaching & Learning—Getting Started. Academic Innovations & eLearning. EduPass. ePortfolio. University of Alaska Anchorage.

Promotion and Tenure Support

Facilitating Program, Faculty, and Student Transformation: A Framework for Curriculum Redesign. Debra Fowler, Maria Lazo, Jacqueline Turner, and Jacqueline Hohenstein. 2015. *Journal of Transformative Learning* 3 (1): 59−73.

Authentic Learning and Teaching

Pedagogy (SoTL)

Pedagogy and ePortfolios: Purpose Aligned to Design (or the Why and How). Kim Watty and Jade McKay. 2015. *International Journal of Pedagogies and Learning* 10 (3): 194−207.

Supporting Academic Learning through ePortfolios

Faculty Development for Curriculum Change: Towards Competency-Based Teaching and Assessment. Linda Snell. 2013. *Faculty Development in the Health Professions* 265−285.

Communities of Practice

Teaching ePortfolios in the Development of Professional Learning Communities (PLCs) in Higher Ed. Cher Ping Lim and John Chi-Kin Lee. 2014. *The Internet and Higher Education.*

Research Eportfolios

CAFÉ. Making Learning Visible. ePortfolio. University of Alaska Anchorage.

Teaching Eportfolios

Catalyst for Learning: Professional Development.

Promotion and Tenure Support

On the Right Track: Using ePortfolios as Tenure Files. Erica S. Danowitz. 2012. *International Journal of ePortfolio* 2 (1): 113−124.

Reflective Practice and Folio Thinking

Pedagogy (SoTL)
Inquiry, Reflection and Integration in Professional Development. Bret Eynon, Laura M. Gambino, and Judit Török. 2014. Catalyst for Learning: ePortfolio Resources and Research.

Supporting Academic Learning through ePortfolios
Stanford Folio Thinking Initiative. Stanford University.

Communities of Practice
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11. Eportfolios and Internationalization: Meeting the Needs of the Emergent Global Learner

Beata M. Jones, John Regan, and Paloma Rodriguez

Eportfolios offer a space for reflection on global issues and globally-focused experiential learning (e.g., study abroad, service learning, internships, on-campus intercultural programs, extracurricular activities); for the articulation and display of relevant skills for career purposes; and for the capture and assessment of student learning. Because they are visible and easily shared, eportfolios can increase the visibility of international programs by making their benefits clear to a variety of stakeholders. More importantly, learner-centered eportfolio projects constitute a pedagogical shift that can enhance student learning and engagement as well as make it more profound. This chapter offers an overview of the potential of eportfolios for the enhancement of global learning, career integration, and campus internationalization.

Keywords: comprehensive internationalization, identity development, integrative learning, intercultural competence, study abroad

Introduction

The need to create globally minded citizens who can interact effectively in an increasingly interconnected world and who can successfully join a globalized job market has generated a growing interest in the internationalization of higher education. US colleges and universities are adopting global learning outcomes and adding international tracks and certificate options to their offerings (Green 2012). Global learning has been identified as one of ten high-impact educational practices on college campuses (Kuh 2008). Student mobility is also on the rise with more international students on US campuses and more domestic students abroad (Institute of International Education 2015). We examine how eportfolios can support campus internationalization and the emergent global learner from the perspective of an individual student, a course or a program, and an institution.

Individual Student Perspective: Global Identity Development

Eportfolios allow students to reflect on their cross-cultural learning and establish connections between experiences, whether they take place in a classroom, in a domestic cocurricular setting, or abroad. As students engage in the process of using eportfolios to make meaning of their personal journey, they consider important questions related to their development as global learners: *How do I know? Who am I? How do I relate to others?* (Braskamp and Enberg 2011). By inviting students to reflect on their roles in the construction of their learning and reality, and by asking them to consider their values and purpose in life in the context of their international courses or experiences, eportfolios allow students to develop a global identity (Rogers 2015).

For international students, eportfolios provide a means to document, share, and reflect upon their cross-cultural experience and the conflicts and tensions between their newer and older

identities (Snider and McCarty 2012). Eportfolio-based identity development is an important exercise since international students are an underutilized resource, despite their potential as agents of internationalization (Green 2005). They also report having poorer interactions with faculty and feeling less supported by their campuses than their US counterparts (Glass et al. 2013). Eportfolios provide a vehicle for the successful integration of international students by making their culturally-informed perspectives visible to faculty and peers, thus allowing for more effective interactions and a richer cross-cultural dialogue campus-wide.

Global identity development can be assessed with self-reported survey data, or via assessment of student portfolio work using rubrics derived from Turken and Rudmin (2013) or a similar scale. A different approach to identity assessment is provided by Celeste Nguyen (2013), and more information on the eportfolio application for identity development is available in Chapter 5 of this guide.

Career Integration

A variety of global learning experiences, such as study abroad programs, service learning, global internships, interactions with international students, or on-campus engagement in international student organizations, can lead to the acquisition of valuable transferable skills. Eportfolios can provide not only an opportunity for reflection on professional growth but also a venue for the proper articulation and showcasing of these abilities to employers. Since the connection between international experiences and employability is not automatic, eportfolios are particularly valuable. Listing a study abroad experience on a résumé can have little weight on an employer's hiring decision: generally it neither helps students obtain a job (Trooboff 2007) nor is lack of this experience important enough to be a hiring deal-breaker (National Association of Colleges and Employers 2015). Rather than the international experiences per se, employers value the transferable skills (e.g., adaptability, problem solving, interpersonal skills) that derive from them (Matherly 2005, National Association of Colleges and Employers 2015). For the articulation of these abilities in their eportfolios, students require guidance in the form of reflective prompts, vocabulary lists, and storytelling techniques (e.g., the situation, task, action, results, or STAR, method).

More information on eportfolios for career purposes can be found in Chapter 8 of this guide. More detailed presentation of how students should be educated about eportfolios for career integration after study abroad can be found in Cheryl Matherly's case study for the American Institute for Foreign Study, "Marketing Your International Experience to Employers" (2014).

Course and Program Perspective

From the viewpoint of faculty and administrators leading a course or a program involving global learning, the eportfolio platform offers a way to articulate goals and capture student learning in curricular and cocurricular settings, allowing students to reflect and integrate their learning across the various activities. Such reflection and integration can then be assessed to demonstrate achievement. Courses or programs offering globally focused learning strive to achieve goals such as global learning and the development of global identity or intercultural competence. At the course level, learning activities requiring reflection and integration might include cultural events, structured explorations, reflection dinners, intercultural interactions, or games in addition to more passive learning involving readings and videos. At a program level, learning might involve

multiple courses, capstone experiences, internships, service learning, research, cocurricular activities, and study abroad. The assessment of student eportfolio work will typically be based on the goals of the course or program, using rubrics and/or self-reported student data from surveys.

Intercultural Competence and Global Learning Competencies

Intercultural competence and global learning are often set as learning goals in international courses and programs, but helping students achieve significant gains in such competencies remains a challenge. Research in the study abroad field shows that longer sojourns and a higher degree of immersion in the host culture alone do not yield better learning outcomes. Instead, reflection and mentorship while abroad have the greatest impact on the development of intercultural competence (Vande Berg et al. 2009; Engberg and Jourian 2015). Eportfolios can contribute to the supportive environment that keeps students engaged by inviting them to reflect and share their experiences with faculty, mentors, and peers. In fact, eportfolios can support learning before, during, and after the course or program, allowing students to set goals; be more intentional when they embark upon their experiences; reflect on and integrate their diverse, somewhat disjointed learning activities; and engage in deeper learning. Such eportfolio practices can be greatly enhanced using mentorship, social pedagogies, and reflective exercises such as blogging and digital storytelling.

Achieving global learning in the classroom can be equally elusive. Simply adding "international" content is not sufficient; faculty must move from pedagogical approaches that compare material from different cultures to ones that apply the perspectives of different cultures and worldviews to important global questions and concerns (Hudzik 2014). Eportfolios in comprehensive campus internationalization initiatives challenge faculty to reevaluate the curriculum and to invite students to integrate a multiplicity of perspectives, acknowledge their own biases, and embrace the complexity of global learning.

Intercultural competence development and global learning can be easily assessed through an eportfolio using AAC&U's VALUE rubrics (n.d.). Students can be asked to reflect upon each of the specified dimensions. Useful pedagogies, such as City as Text (Braid 2010) and PRISM (Williams 2014), might aid faculty in developing reflection prompts for their eportfolio projects (Jones et al. 2015). Savicki (2008) provides guidance for developing learning activities and assessment of student transformation. In addition to eportfolios, institutions can use pre- and post-course and program surveys to measure intercultural competence development. The University of Kentucky (2015) suggests several assessment scales. Using pre- and post-course surveys of students, combined with the assessment of learning through an eportfolio, offers the richest set of data.

Chapter 4 of this guide further addresses eportfolio applications for reflection. More detailed presentations of how students can use their study abroad eportfolios for intercultural competence development is available in the case studies written by Beata M. Jones (Cultural Pathways through Eastern Europe ePortfolio) and Helena Kaufman (ePortfolios for Study Abroad: Carleton College). An additional case study by Eric M. Feldman (ePortfolios for Global Learning: Florida International University) discusses the use of eportfolios in global certificate programs.

Institutional Perspective

From the viewpoint of an institution, a campus-wide eportfolio initiative in support of global learning helps with comprehensive campus internationalization, tighter curricular and cocurricular integration, faculty development, and promotion of international programs.

Comprehensive Internationalization

Comprehensive internationalization "is the planned, strategic integration of international, intercultural, and global dimensions into the ethos and outcomes of higher education" (NAFSA 2014, 1). To achieve it, international programs and perspectives need to become an integral part, not just of the curriculum and cocurriculum, but of the institutional mission, value, and ethos (Hudzik 2011; Hudzik et al. 2012). Because they are easily shared and integrated, eportfolios offer a valuable, cost-effective platform for the implementation of a comprehensive internationalization strategy. By rendering global learning visible, eportfolios can demonstrate the relevance of global learning programs and their alignment with institutional missions and values. Their capacity to capture learning in different settings encourages shared ownership and engagement from a variety of institutional stakeholders, especially if used in conjunction with a campus-wide initiative such as a global certificate program. In addition, eportfolios can increase the visibility of international programs and add brand-value to the institution by showcasing students' learning, achievements, and professional development (Rodriguez 2016).

Integrating the Curricular and the Cocurricular

Comprehensive internationalization scholarship has long recognized the important relationship between curricular and cocurricular experiences. Yet the integration of both areas and the assessment of internationalized cocurricular activities remains a challenge (Ward 2013, 1). Eportfolios provide a tool for meaningful assessment of all campus experiences. As students collect and post artifacts from both curricular and cocurricular activities, they reflect on their experiences in an integrated way. This provides university stakeholders a tool for the assessment of student learning in both areas.

Promoting Faculty Development

Eportfolios promote structured, reflective faculty development. Faculty can use eportfolios to develop new ideas and practices, reflect on the value of those ideas, and consider new steps moving forward (Catalyst for Learning 2014). Faculty can also engage in eportfolio building as a way to document their international experiences and research abroad. Faculty eportfolios can be a powerful engine of institutional change; by showcasing international projects, syllabi, and experiences, these portfolios act as an empowering model that can encourage other colleagues to increase their international engagement.

To assess eportfolios in campus-wide initiatives, codebooks or a system of categories of analysis (Impedovo et al. 2013) might be the most appropriate tool to use. More information on the eportfolio application at the institutional level is available in Chapter 6 of this guide.

Paloma Rodriguez' case study *ePortfolios in Global Certificate Programs: A Vehicle for Comprehensive Internationalization* provides further discussion on how institutions can use eportfolios as part of their comprehensive internationalization strategy.

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12. How Important Is the Technology?

Ruth E. Benander, Nancy J. O'Laughlin, Rochelle Rodrigo, Cindy P. Stevens, and Marc Zaldivar

When implementing eportfolios, the technology to use is among the first decisions. Eportfolio technology provides a collaborative work space and online repository for learning artifacts, allowing students to create websites showcasing and reflecting on artifacts for a particular purpose. In addition, eportfolio technology provides rich aggregate data for institutional research. However, while the technology can support many functions, not all available platforms do them equally well or in the way that a campus may need. The eportfolio's purpose, pedagogical styles, and institutional context are key factors in choosing appropriate technology.

Keywords: platform, technology support, software applications learning, professional, assessment

Introduction

As has been made clear throughout the *Field Guide*, eportfolio pedagogy is more important than eportfolio technology. However, since we are discussing electronic portfolios, the technology is essential. For our purposes, technology here primarily means the digital software and services that the user (student, faculty member, institutional representative, etc.) can use to develop eportfolio materials.

Eportfolio platforms (Batson 2015) are essentially web-hosting and editing environments. Traditional paper portfolios can easily be made digital with PDFs and a hyperlinked table of contents; however, to take advantage of the affordances of a digital environment, especially when including multimedia and synthesizing with assessment analytics, eportfolios are usually developed in more robust applications. One option is to purchase a commercial application devoted to creating eportfolios, while another option is to use any of the free Web 2.0 programs (Barrett 2009) available on the internet, such as Google Sites, WordPress, Weebly, or Wix. As software continues to develop, new options are always coming to the fore. Choosing between commercial platforms and Web 2.0 platforms depends on multiple variables such as purpose, assessment, analytics, privacy, portability, and personalization.

How Does the Function of the Eportfolio Influence What Platform to Choose?

The primary function and audience of the eportfolio influence the technology choices. More purposes associated with an eportfolio, and a large variety of potential audiences, require a more robust system. The type of eportfolio being created—the learning eportfolio, professional eportfolio (also known as a showcase eportfolio), and/or assessment eportfolio—suggests its purpose and audience. The learning eportfolio shows progress over time, the professional eportfolio documents skills mastery, and the assessment eportfolio emphasizes outcomes achievements.

The Learning Eportfolio

The learning portfolio combines reflection, documentation of activities, and collaboration among students and instructors to create a document that demonstrates learning over time (Zubizarreta 2008). This type of portfolio can also be called a developmental portfolio since it shows how a student has developed over a term or degree program. The minimum functional expectations for a learning eportfolio application include

- accommodating multimedia,

- mapping accessible navigation among artifacts (Pima Community College 2011), and

- sharing between primary users (students and teachers).

The life expectancy of the platform should be fairly stable so that a student might continue to build this eportfolio during his or her career at the institution. But, for the purposes of single-course eportfolios, students might use a different platform for each class. For a learning eportfolio in a course, the instructor can assess the eportfolio and the artifacts with rubrics, meaning no formal analytics are required. Institutional assessment of learning that involves courses across an institution, such as general education, probably requires a commercial platform with strong analytics.

The Professional Eportfolio

Unlike the learning eportfolios, the professional eportfolio (also known as showcase or career portfolio) usually does not show before-and-after work to demonstrate growth over time. Instead, the professional eportfolio includes finished pieces that demonstrate mastery. A professional eportfolio allows the developer to present his or her intellectual and professional value while building social capital (Stevens and Dunlop 2012). Beyond the functionality needed for a learning eportfolio, a professional eportfolio requires the ability to

- customize the look, feel, and navigation of the published eportfolio;

- provide access to a variety of different audience members; and

- export and import the eportfolio materials into different digital environments.

Developers need to be able to distinguish themselves from one another in the same program or graduating class so that when they use the eportfolio on the job market, it helps them stand apart. If the professional eportfolio is to be useful beyond graduation, the ability to share with multiple audiences is also critical for long-term usage.

The Assessment Eportfolio

In *Assessing Student Learning*, Suskie (2009) offers a set of fundamental components for understanding assessment portfolios with an emphasis on having a clear set of learning objectives and evaluation criteria that students meet through content choices, artifact selection, and reflection. The portfolio offers an opportunity to observe each student's attainment of curricular outcomes and other desired outcomes from courses and programs, offering a chance to grow and improve those outcomes. This assessment cycle may occur in a single course or in multi-year programs. Beyond the functional elements needed for a learning portfolio, an assessment portfolio's technology needs to facilitate

- creating and communicating learning objectives, evaluation criteria, and feedback;

- storing, selecting, evaluating, and reflecting upon appropriate artifacts by the student;

- storing, retrieving, and reporting on artifacts, reflections, and evaluations over the individual, programmatic, and/or institutional assessment period(s); and

- accessing, evaluating, and reporting by multiple users (e.g., student/author, faculty, assessment coordinators, or outside evaluators).

Especially for program and institutional assessment, a commercial platform with analytics and reporting capabilities is best; however, some institutions have used rubrics and spreadsheets to aggregate and synthesize large amounts of assessment data.

## Does It Matter Who Owns the Eportfolio?

With so many different uses and users of eportfolios, ownership of the eportfolio and its content is an important technical consideration. Throughout the literature there are references to eportfolios as student-owned, owner-centric, or belonging to the learners. According to Paris and Ayres (1994, 10), "The overarching purpose of portfolios is to create a sense of personal ownership over one's accomplishment, because ownership engenders feelings of pride, responsibility, and dedication." The type of technology impacts who has agency in designing, developing, and sharing the eportfolio.

If electronic portfolios "belong" to the student, it is implied that learners have the right to use their data; they must be able to individually administer access to their data themselves, and once they have graduated or left the institution, their data should still be available to them (Himpsl-Gutermann and Baumgartner 2010). Commercial platforms can sometimes be more difficult for student users to access and own. When eportfolios are used for institutional assessment, the issue of student ownership is often addressed in a policy requesting students to sign-off or permit the anonymous use of their work (Acker 2005). Web 2.0 platforms usually provide students more access and ownership over their work; however, if institutions want access, students must provide their URLs to the institution.

How Do Selection and Support Models Influence the Platform I Choose?

Different models of adopting technology depend on elements like institutional culture, purposes of the eportfolio, key stakeholders, support plans, and cost. Each unique institutional context will involve adapting different processes for the current needs of the institution. Processes can range on a continuum from a traditional, more formalized, top-down model to a more eclectic bottom-up model. Slade, Murfin, and Readman (2013) describe a process of assessing and selecting an eportfolio tool that is inclusive of both a top-down and bottom-up process. In Figure 1 we summarize a decision-making process for choosing an eportfolio platform involving similar elements.

Figure 1. Comparison of the Bottom-Up vs. Top-Down Decision-Making Processes for Choosing an Eportfolio Platform
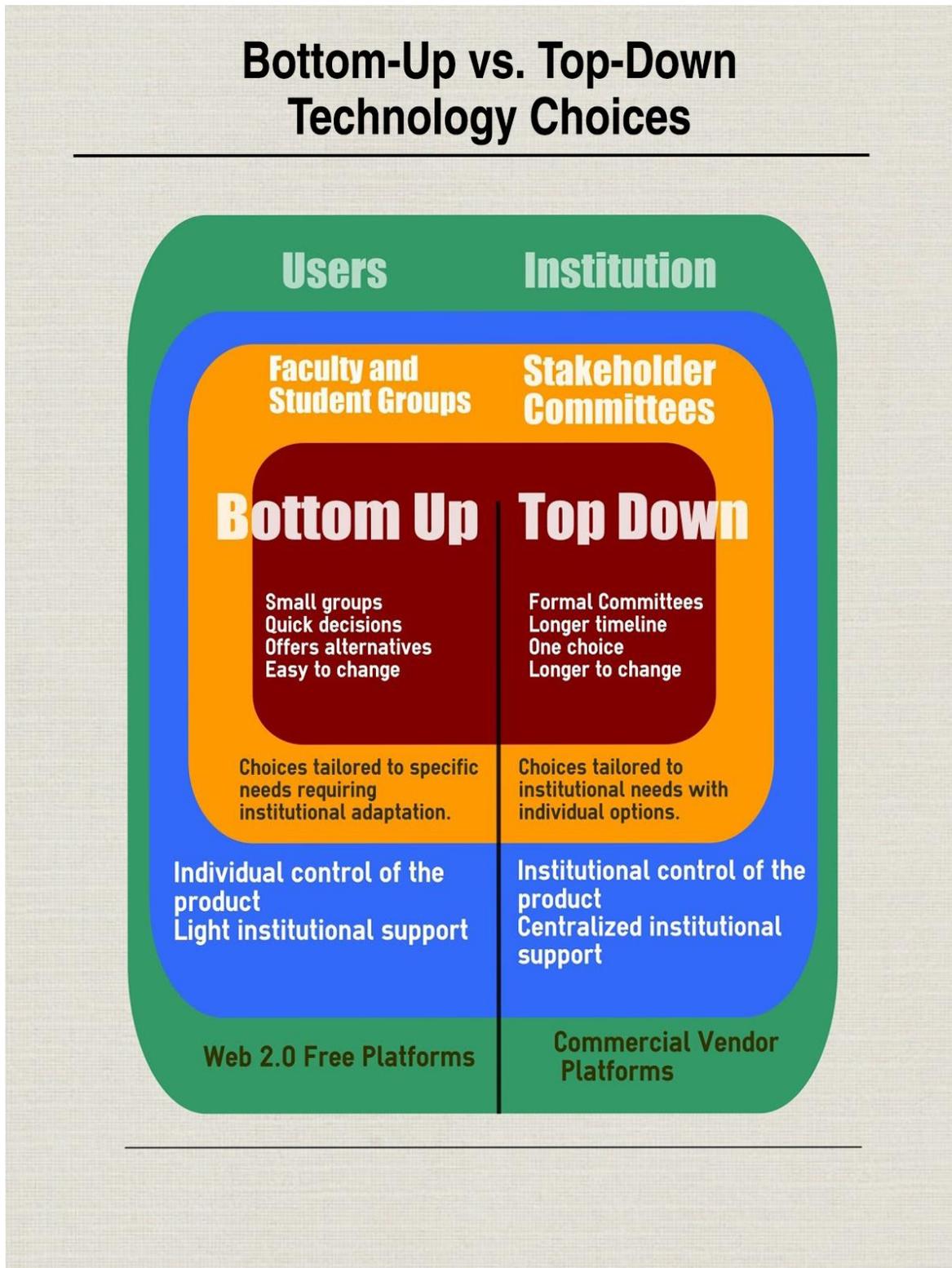
Traditional Institutional Technology Model

Although there are different processes for eportfolio platform selection, the traditional model, as documented by Ring and Ramirez (2012), is still a very popular technology-acquisition method. For institutional enterprise-wide platforms such as PebblePad or Digication, the cost investment and the breadth of implementation might require a top-down, more traditional model of technology adoption. The traditional model can be time-consuming, and reporting could become outdated before a platform is selected. However, the traditional method usually facilitates a more detailed investigation into various technology solutions and fosters more stakeholder feedback. Traditional acquisition generally consists of stages for determining eportfolio platform technology selection. Table 1 summarizes a generic traditional technology-acquisition process along with typical sub-processes. As demonstrated in the "operating" section of the process, the traditional model usually includes centralized training and support with centralized decision-making and purchasing.

Table 1. Traditional Institutional Technology Model

Traditional Technology Process	Traditional Technology Sub-Processes
Determining	User Definitions Scope Project Schedule Assessment
Evaluating	Technology Assessment Feature Assessment Research On Site/Off Site Demos
Selecting	Negotiations with Stakeholders
Implementing	Pilot Testing Feature Selection
Operating	Training Upgrades and Maintenance Support

Bottom-Up Model

While the traditional model has the advantages of centralized support and the enterprise software generally has strong analytics, the model requires time and stable funding. Other bottom-up models can be less costly, more responsive to individual contexts, and more capable of quick change when necessary. If faculty in different departments or courses are experimenting with different

approaches for various purposes and student populations, then a bottom-up model, which is typically more eclectic, might be most nimble and entrepreneurial (Ammari, You, and Robert 2015). In this process, each department or program that is implementing eportfolios chooses an application (usually a free Web 2.0 option or a menu of options) and uses what works for their students and their circumstances. The advantages of this approach are speed of acquisition of the platforms, ability to change at need, and (usually) more student control of the product. The disadvantages of this process are a lack of centralized student and faculty support and weak analytics for assessment.

What Is the Bottom Line?

The purpose of the eportfolio influences technology choices. How and why the eportfolio is being accessed and used, as well as by whom, impacts which applications a teacher, program, and/or institution should use. The purpose of the portfolio also includes whether it is a learning, professional, and/or assessment portfolio. An assessment portfolio works best in an eportfolio platform shared across the university with strong analytics. A learning portfolio works well with this technology, but also works well with Web 2.0 tools. A professional portfolio might work best using Web 2.0 tools since it requires portability and student ownership beyond graduation. Choosing a commercial vendor for an institution-wide platform benefits from the top-down adoption process so that all stakeholders can be involved in the choice, and the funding and institutional support can be coordinated. The bottom-up process of individual choices tailored to specific programmatic needs usually requires Web 2.0 applications and self-support.

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The Association of American Colleges and Universities (AAC&U) is the leading national association concerned with the quality, vitality, and public standing of undergraduate liberal education. Its members are committed to extending the advantages of a liberal education to all students, regardless of academic specialization or intended career. Founded in 1915, AAC&U now comprises nearly 1,400 member institutions—including accredited public and private colleges, community colleges, research universities, and comprehensive universities of every type and size.

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About AAEEBL

The Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL) is the leading international organization concerned with supporting learners to engage in practices that enhance learning and student success across the learning career. Founded in 2009, AAEEBL is comprised of member institutions, including accredited public and private colleges, community colleges, and research universities of every type and size, and individual members across four continents. Our mission is to facilitate collaboration among international stakeholders who are interested in documenting deep learning with ePortfolios. We mobilize the learning from our collective experiences to build new knowledge, inform practice, and assist with improving learning technologies through our community and resources. Information about AAEEBL membership, programs, and publications can be found at www.aaeebl.org.