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ePortfolio Pedagogy, Technology, and Scholarship: Now and in the Future

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A number of indicators, including new professional organizations, the proliferation of software tools, and the launch of a new international journal, are signaling a critical mass of interest in ePortfolios in educational settings (Batson & Watson, 2011). This article describes the current ePortfolio landscape by examining the key promises offered by such tools in teaching and learning, assessment, and professional development settings. Appraisals of existing technologies along with likely directions for technological development are discussed. The article concludes by identifying key areas of current and future scholarship associated with ePortfolios.

Introduction

Over the past decade, there has been increasing international interest in ePortfolios (electronic portfolios) in educational settings. The EPAC (Electronic Portfolio Action and Communication) community of practice, launched in 2002, was among the first to herald concerted interest in ePortfolio. Since then, professional organizations, such as EifEL in Europe, the Australian Flexible Learning Framework, and the Association of American Colleges and Universities, have embraced ePortfolios, as evidenced by their launching of related conferences and various associated development activities. Two years ago, a new plateau was reached when the Association for Authentic, Experiential, and Evidenced-Based Learning (AAEEBL, pronounced

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“able”) was formed (AAEEBL, 2011). AAEEBL, billed as the world ePortfolio community, has relationships with nearly all ePortfolio organizations and hosts a new annual conference, the World Portfolio Summit. And, most recently, the launch of the *International Journal of ePortfolio* (<http://www.theijep.com>), published by the Center for Instructional Development and Educational Research at Virginia Tech, signals the establishment of a sustained scholarly community regarding the topic.

Concurrent with these professional and scholarly activities is the rapid arrival of myriad new ePortfolio software tools that speak to various aspects of the ePortfolio movement (EPAC, 2011; Himpsl & Baumgartner, 2009; Strivens, 2007). It has been observed that these events collectively are suggestive of a critical mass of interest in ePortfolios (Batson & Watson, 2011). Within this emergent context, this article provides a current overview of ePortfolios within educational settings, with special attention given to the pedagogical value of ePortfolios and their associated learning processes. In addition to this focus on teaching and learning, pragmatic challenges associated with ePortfolios within institutional settings are discussed as well as expected future technological directions and scholarship.

What Is an ePortfolio?

A valuable way of describing ePortfolios is to view their capabilities through their lineage. As time has passed, the promise associated with these practices and tools has expanded dramatically. Traditional (paper-based) portfolios provide the foundation for ePortfolios and have been used for several decades in disciplines as diverse as teacher education, nursing, and English as well as in K–12 settings (Challis, 1999; Elbow & Belanoff, 1986; Wolf, 1996). Traditional portfolios are typically the product of a course or program assignment that requires students to collect evidence of and reflect upon their academic accomplishments. The resulting product exists as a hard copy and often contains examples of exemplary work regarding specific learning outcomes. Student-crafted narratives that make connections between and across these artifacts of learning over time are typical of traditional portfolios (Hutchings, 1990). Such portfolios have often been shared with potential employers as part of the application and hiring process (Strawhecker, Messersmith, & Balcom, 2007–2008).

The limitations of traditional portfolios, including their cumbersome, time-consuming, and difficult-to-manage nature (Wolf, 1996), may have prevented broader adoption in higher education; however, by the late 1990s, initial attempts at Web-based portfolios were being piloted in the hopes that technology could mitigate some of these challenges. Initially, students were required to create Web pages using HTML or a Web page editor to link various learning artifacts together. The Web extended the portfolio concept by enabling the inclusion of multimedia and making portfolio distribution easier (Barrett, 2000). These were the earliest examples of ePortfolios. Database driven

systems with simple presentation templates emerged in the early 2000s that diminished the requirement that students possess Web development skills. This innovation removed key entry barriers associated with ePortfolios.

As the 2000s progressed, significant calls for accountability in higher education emerged and increased (Burke, 2005). Professional schools were particularly impacted by this trend, as accreditors, such as ABET and NCATE, enacted greater accountability measures. Additionally, various state and federal mandates required proof that students were indeed learning the outcomes identified by a program and/or institution. Since students were already collecting examples of their accomplishments in ePortfolios, institutions began to develop strategies that would extend these activities into the realm of assessment. This was exceptionally attractive, as ePortfolios provide a long-term storage solution for student work, and many institutions found holistic portfolio assessment strategies more attractive than alternatives, such as standardized testing. The complementary promise of ePortfolios for both learning and assessment, coupled with students’ professional development activities, has largely driven interest over the past five years and brought us to our current place of critical mass.

With the instantiation of interactive Web 2.0 features within ePortfolio systems, capabilities now include blog-like comment/feedback spaces, collaborative ePortfolio development possibilities, and linked rubric/grading activities. These collective and emerging capabilities have led us to the following current vision, grounded in educational psychology, of ePortfolios for teaching and learning.

ePortfolios for Teaching and Learning

An ePortfolio, as all technologies, is a tool; a tool that, in the right hands, under the right direction, and with the right effort can transform a student’s understanding, agency, and world view—in the wrong hands, under the wrong direction, and without effort, an ePortfolio is simply a Web page. What makes an ePortfolio “right” is the pedagogy within which the ePortfolio is embedded. ePortfolios have been demonstrated to be effective in fostering student understanding, agency, and world view when they inculcate reflection and feedback (Cambridge, 2010). In addition, ePortfolios have been shown to be effective across various domains and demographics, including engineering (Herman & Kirkup, 2008), English (Acker & Halasek, 2008), literacy (Romova & Andrew, 2011), students with disabilities (Kleinert, Browder, & Towles-Reeves, 2009), and diversity studies (Akkerman & Bakker, 2011).

As a reflective tool, ePortfolios serve to motivate students to re-examine their experiences, thoughts, knowledge, and behavior (Peet, 2010; Schön, 1983). This re-examination process provides the impetus for learning as students organize their knowledge into elaborate schemas, integrate knowledge from multiple domains, develop complex concepts and processes, and build deep comprehension and meaning. This deep comprehension and meaning is further

facilitated when ePortfolios are used as a feedback tool, where faculty and peers provide students with detailed information and insight regarding the process in which the students engaged to produce a particular artifact or reflection, knowledge of performance, as well as the success of that endeavor. (Barbera, 2009; Nicol & Macfarlane-Dick, 2006). In addition, as feedback improves the quality of learning, it also increases the rate of learning—feedback serves to facilitate the development of knowledge, skills, and attitudes more expeditiously than practice/performance alone (Mory, 2004).

As knowledge, skills, and attitudes are developed through reflection and feedback on a student's own work, ePortfolios provide a scaffold for students to integrate learning within and across assignments, courses, domains, applications, and communities (Huber & Hutchings, 2004; Kreber, 2009). This integrative learning encourages students to synthesize their knowledge, develop flexible knowledge structures, and transfer knowledge, skills, and attitudes more readily across boundaries (Akkerman & Bakker, 2011). Perhaps the greatest boundary to cross is the boundary of time, the challenge to develop learners and learning that persist beyond time-constrained courses, programs, and degrees, and into life itself (Cambridge, 2010). ePortfolios have the potential to be lifelong learning companions, providing a mechanism for sustained reflection, multilevel feedback, and existential integration.

Ultimately, ePortfolios for teaching and learning are about both cognitive and metacognitive development. While students learn cognitively, content and skills, they will also learn metacognitively, developing the cognitive awareness, strategic control, and comprehension monitoring necessary for the development of self-regulated, lifelong learners.

Current Key Challenges

Coupled with this vision of ePortfolios as a mechanism for facilitating learning, their full promise is that of a tool that can concurrently serve the learning, assessment, and professional development needs of institutions and their students. While this potential is broadly embraced, a number of important challenges regarding related technologies currently exist. Most notable among these is that few if any of the systems currently available are able to adequately address all three of these areas (Cambridge, 2010). Programs and institutions that enter the ePortfolio arena due to assessment and accreditation pressures reasonably select an institution-centric system that serves predominantly to capture and store evidence of student learning. Due to various accreditation cycles, some institutions may need to store data for up to a decade and require "snapshots" of data at given intervals. As a result, ePortfolio systems selected for this purpose have features that focus on institutional need and typically lack student-centered functionality or design. Students who are engendered with lifelong learning skills using such an ePortfolio system often

find it difficult to take their ePortfolios from the institution in a meaningful way beyond graduation.

Some systems offer export options that result in a collection of static HTML files. Certainly features, such as WYSIWYG editing and Web 2.0 interactivity capabilities, associated with such a system are lost in the migration, and only the most motivated of students will attempt to rebuild their ePortfolios and revise their lifelong learner skillset in an alternative location post-graduation. Most find that lifelong learning skills associated with ePortfolio development are difficult to continue in such a circumstance.

On the other end of the spectrum are programs that wish to maximize student motivation and learning by selecting a student-centered system. The most empowering of such models are Cloud-based systems that require no migration path for students upon graduation and can incorporate various types of sites linked together, including blogs, social networking sites, as well as ePortfolios. Certainly lifelong learning skills taught and fostered through academic experiences using this approach can be easily continued beyond graduation. While there is a wide range of options available for such purposes, it is important to note that many small start-up companies are launched with the sole intent of being sold. Ultimately, the long-term integrity of data stored in such systems is difficult to determine. Such an approach can be risky for both faculty and students and may be untenable for those with any intention of using these ePortfolios for longitudinal assessment purposes.

As with the launch of any technological or pedagogical innovation in education, there are a number of adoption challenges as well. Top-down decisions regarding change in higher education are often ineffective and sometimes garner strong, negative responses from faculty who feel left out of the decision-making process (Dirckinck-Holmfeld & Lorentsen, 2003; Kershaw, 1996; Taylor, 2003). Therefore, faculty, administrators, faculty developers, and instructional technologists should collectively and clearly articulate their system requirements and review numerous tools prior to moving forward with a pilot of a select few. The aforementioned EPAC offers an extensive and oft-revised list of current ePortfolio systems that will aid any institution participating in the selection and review process (EPAC, 2011).

In addition to challenges associated with system selection and rollout, the pedagogies and assessment practices associated with ePortfolio are non-trivial and are often challenging for faculty to implement in meaningful ways. Even further, many faculty do not possess mental models regarding, for example, reflection, lifelong learning, and integrative learning, as they may not have encountered them at any prior point in their academic careers.

Ongoing faculty pedagogical development regarding ePortfolio practices must be an integral component of all ePortfolio initiatives. The Concerns-Based Adoption Model (CBAM), developed specifically for educational settings, provides an exceptional set of pragmatic strategies designed to enable faculty developers to recognize where

faculty are in the adoption process and, by doing so, determine their points of resistance. This diagnosis is coupled with sets of strategies regarding how to address various faculty concerns that exist in each stage of the adoption process (Hall, 1979; Hall & Hord, 2001).

The Future

The aforementioned technological, pedagogical, and adoption challenges are certain to persist into the foreseeable future, though scholarship presented and available through related conferences and the *International Journal of ePortfolio* will be essential in overcoming these issues. It is expected that ePortfolio technologies will advance in the coming years as well. While robust ePortfolio tools currently exist that address assessment, learning, or student professional development, it is likely that significant new systems will emerge that are capable of addressing all three concurrently. Given the challenges described above, new systems are likely to emerge that are variations on one of the following two forms:

1. *An institutionally-based model where migration is not required of students upon graduation; however, student access continues.* It is foreseeable that, for example, alumni relations groups within colleges and universities might inherit student portfolios and charge alumni a yearly fee for continued use, much like existing Cloud-based ePortfolio systems. Such continued student relationships with alma maters would certainly further the goals of most alumni relations groups, guarantee storage of and access to student portfolios for assessment purposes, and enable students to practice ePortfolio-based lifelong learning skills beyond graduation.
2. *A Cloud-based model where students possess accounts on a system outside of the university IT structure.* Here, some areas of these ePortfolios might be tagged, through metadata, for institutional needs. Mechanisms might exist through which the institution could harvest and manage samples of student work for assessment purposes. Like the institutionally-based model, here students decide if they would like to continue their subscription and maintain their Cloud-based ePortfolio collection beyond graduation.

This latter model is currently being actualized through emerging features in systems like Digication that have behind-the-scenes assessment management systems (AMS) for use by the institution while still providing students with ownership and flexibility regarding their ePortfolios. Beyond these two ePortfolio system models, work is also being forged in the area of ePortfolio portability and interoperability (Leap2A, 2011). While not broadly adopted by ePortfolio vendors at this point, this also holds promise for mitigating the issues described above.

Areas of Emerging and Continued Scholarship

Through its call for papers, the *International Journal of*

ePortfolio (IJeP) has defined the course for scholarship into this domain for the coming years (IJeP, 2011). It invites both empirical and case study manuscripts focusing on three core areas: teaching and learning; assessment; and technology, policy, and management. It further seeks to foster scholarship into new and emerging domains by encouraging submission of what it terms “distinctive” topics within the larger context of ePortfolios in educational settings. As is apparent from their first issue—available via <http://www.theijep.com/current.html>—lifelong learning, reflection, feedback, and integrative learning are current topics of scholarly interest regarding teaching and learning with ePortfolios. These themes mirror recently-funded FIPSE projects regarding ePortfolio (Batson, 2010; FIPSE, 2010). Collectively, this is suggestive of likely directions for ePortfolio research in the coming years. Inventive strategies for managing and structuring ePortfolio assessment opportunities as well as ePortfolio rubric development strategies are also among the areas appearing in the first issue of IJeP as well.

As ePortfolios for teaching, learning, and assessment purposes become increasingly instantiated at multiple institutions, research will likely extend to and increase regarding ePortfolios for professional development. Descriptive studies regarding the usage of ePortfolios in hiring processes in a variety of public and private sectors will emerge. Given the breadth of information available via ePortfolios, there is concern that they will significantly increase the time it takes to review job candidates and may therefore be ignored. Further, because many ePortfolio systems rely on a small number of templates from which students must choose to share the contents of their ePortfolios with potential employers, there may be little variation in organizational options and visual cues from one ePortfolio to the next. As a result, job candidates’ ePortfolios from the same program are often fairly indistinguishable, visually, from one another. The perceptions of hiring managers regarding ePortfolios as application tools requires significant research to validate their efficacy as a companion to the traditional resume.

Conclusion

Given continued calls for accountability in educational settings and a desire for realistic evidence of student learning (Maki, 2009), increasing interest in lifelong and integrative learning strategies (Huber & Hutchings, 2004; Kuh, 2008), and private-sector profitability opportunities brought about by the critical mass of interest in ePortfolios (Batson & Watson, 2011), it is foreseeable that ePortfolios may soon be as common in secondary and postsecondary education as learning management systems. Significant challenges, however, have prevented institutions, faculty, and students from reaching the full potential of ePortfolios. Technological advancements and the empirical validation of pedagogical practices will be key to advancing ePortfolios to meaningful ubiquity in secondary and postsecondary education. □

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