The evolution of ePortfolios for school library education: A case study

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This article presents a case study of the implementation of ePortfolios as authentic assessments in a school library preparation program at a mid-sized university located in the southeastern region of the United States. It documents how the use of ePortfolios evolved from show-and-tell PowerPoint presentations into powerful, reflective, Web 2.0-enhanced learning experiences that demonstrate school library candidates' mastery of professional standards. The case study focuses on the programmatic approach to process, product, and final assessment. Examination of the ePortfolio experience led to faculty interest in the concept of transparency in online learning, and to the decision for formal integration of peer review in the ePortfolio process.

Introduction

Lifelong learning, information literacy, 21st century skills, leadership, advocacy, change, new technologies—all of these elements are identified as critical knowledge, skills and dispositions for 21st century school library media professionals (American Library Association [ALA]/American Association of School Librarians [AASL], 2010). In the United States many master's programs that prepare school library candidates to develop and manage library and information services in a PreK-12 setting follow the (2010) *ALA/AASL Standards for Initial Preparation of School Librarians*. These standards include many action verbs—assess, support, implement, document, communicate, collaborate, model, share, advocate, demonstrate—all words that speak to the behaviors expected of a 21st century school librarian. What strategies can a school library preparation program use to ensure that pre-service school librarians go beyond classroom performance and actually perform the roles of a school librarian in an authentic setting? The fully online Master of Instructional Technology Program at Georgia Southern University has adopted several strategies to achieve this goal.

Our program is primarily project-based, so throughout their coursework candidates are in school libraries collaborating with students, teachers, and school librarians to engage in the real work of a school librarian, albeit within the typical constraints of a required assignment. This project-based approach culminates in a semester long practicum (http://iteclibrarypracticum.weebly.com/index.html) completed at the end of the program. During the practicum, candidates for school library media specialist certification (the term still used in Georgia) complete a variety of tasks and activities in different schools to demonstrate their mastery of the ALA/AASL standards. Rather than documenting mastery individually (as happens

with specific assignments submitted in required classes), we have implemented an ePortfolio process that makes the knowledge, skills, and dispositions our candidates have acquired visible and transparent across their entire program of study, both in specific courses and within the practicum. This article presents a case study of the evolution of our program's student portfolios from show-and-tell PowerPoints into powerful, reflective, Web 2.0-enhanced learning experiences. Cambridge (2012) suggests that "when deeply integrated into and across the curriculum and co-curriculum, e-portfolios go far beyond an enhanced resume or transcript" (p. 52). The road to creating a program-wide system of ePortfolios that "help students develop…the strategies and confidence to learn independently [and] the understanding of one's own strengths and predilections to allow for more effective collaboration" (Cambridge, 2012, p. 52) has not always been easy, but as the case study presented here demonstrates, the outcomes have been well worth the collaborative efforts of students and faculty.

Even though the primary focus of our use of ePortfolios is on the reflective demonstration of mastery of standards, the evolution of ePortfolios has led program faculty to examine a series of related issues. In the following sections we will situate our program's use of ePortfolios in literature that examines theory and research related to the use of portfolios/ePortfolios in teacher education and school librarian preparation. We also identify issues related to the use of an open ePortfolio approach (i.e. the use of Web 2.0 tools for portfolio construction) and how that open approach supports the broader trends of making student work visible and transparent. The case study section describes the evolution of our ePortfolios in detail, focusing on the programmatic approach to process, product, and assessment of ePortfolios.

Literature Review

Portfolios in any format are used in many teacher education programs at both initial and advanced levels. For the most part, research has found that portfolios are a valid approach to assessment of knowledge and skills, particularly in terms of authentic performance (see for example, Jones, 2010; Pecheone et al, 2005; and Tucker et al, 2003). The use of portfolios in teacher preparation programs as a form of authentic assessment for teacher candidates began in the mid-1990s. Following the publication of the 1996 *What Matters Most: Teaching and America's Future* (Mullen, Britten, & McFadden, 2005) which highlighted the inadequacies of teacher preparation and called for reform and change in the teaching profession, "teacher education institutions began to restructure their practices and expectations" (2005, p. 17). As part of that effort teacher educators began to look beyond exams for alternative forms of assessing the content and pedagogical knowledge of pre-service teachers (Takona & Wilburn, 2004). Their attention turned toward the portfolio which had already become widely accepted as an alternative assessment tool by K-12 schools (Shaklee, Barbour, Ambrose, & Hansford, 1997, p. 6; Wilcox & Tomei, 1999, p. 3).

In contrast to traditional assessments such as examinations, the portfolio is an authentic assessment tool because it measures a student's ability "to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills" (Mueller, 2005, p. 14). In their portfolios students exhibit selections of their work, often called artifacts, that show their "effort, progress and achievement in one or more areas" (Paulson, Paulson, & Meyer, 1991, p. 60). Included in the portfolios are reflections and self-evaluations in which students analyze and support their choice of artifact as a demonstration of what they have learned and what they can do. Because portfolios provide evidence that pre-service teachers have successfully mastered the knowledge and pedagogical skills they have learned in their preparation program and can apply those in the school environment, they are a suitable choice of assessment in teacher preparation programs.

Portfolios can be used in several different ways to evidence growth in learning: as a formative assessment during the student's teacher education program, as a summative assessment showcasing how the teacher candidate has met specific standards, or a combination of both formative and summative. Most states require that "preparation and credential programs meet national or state standards" (Johnson, Mims-Cox, & Doyle-Nichols, 2010, p. 4). The National Council for Accreditation of Teacher Education (NCATE) is the "accrediting body for colleges and universities that prepare teachers and other professional personnel for work in elementary and secondary schools" (Mullen, Britten, & McFadden, 2005, p. 41). To qualify for accreditation teacher

education programs must achieve NCATE standards. Teacher education institutions must show that they provide opportunities for candidates "to acquire the knowledge, skills, and dispositions necessary to help all students learn" (p. 42). Since portfolios are a useful way of providing documentation of the competencies of pre-service teachers in meeting professional standards, many colleges of education use portfolios for program assessment to meet the accreditation requirements for NCATE. Portfolios are also used as an assessment tool in schools of library science, particularly those that educate school librarians (Brown & Boltz, 2002).

Traditionally portfolios were created using a paper-based format, but by the late 1990s digital portfolios began to make their appearance (Barrett, 1998; Hartnell-Young & Morris, 1999; Yancey, 1996). Variously referred to as electronic portfolios, ePortfolios, eFolios, and Web folios, digital portfolios are "digitized, computer or Web-based versions of traditional portfolios" (Bolliger & Shepherd, 2010, p. 295). The electronic format gives ePortfolios several advantages over their paper-based counterparts. Students can easily update their portfolios so they remain current. ePortfolios take up less storage space and are easily portable on a flash drive or CD-ROM. Web-based ePortfolios can be accessed at any time, and by anyone no matter where they are located geographically. Another feature that is unique to ePortfolios is the ability to include multimedia artifacts featuring video, audio, and images (Sung, Chang, Yu, & Chang, 2009). They also contain hypertext linkages that give students the ability to show connections between selected artifacts and the standards they address (Barrett, Johnson, Mims-Cox, & Doyle-Nichols, 2010, p. 155). Perhaps the greatest benefit is that through the process of creating ePortfolios, students demonstrate their proficiency in a technology-rich environment, while showcasing the work they have done through implementing technology to support instruction and curriculum (Mullen, Britten, & McFadden, 2005). This is especially important since the ability to use technology effectively is an important skill expected of all educators and one that is threaded throughout NCATE standards.

Open ePortfolios Promote Visibility and Transparency of Student Work

Many decision points occur in the process of implementing ePortfolios across a program. One of the earliest is related to selection of technologies. Programs for school library education are typically housed in a school of library and information science or a college of education and many of these larger units have adopted an electronic assessment system that allows simple creation of electronic portfolios using assignments submitted throughout the program. Other units have purchased special software that provides a common template and possibly server space to house student ePortfolios, while other institutions have developed home-grown campus or unit wide portfolio systems (Cambridge, 2012; Lorenzo & Ittelson, 2005; Waters, 2007). While these systems include spaces for reflection about the selection of artifacts, the template-based approach common to these systems limits creativity. Freely available Web 2.0 and social networking tools provide a viable alternative that permits flexibility and allows students to create powerful, personalized, transparent ePortfolios that reflect authentic practice (Batson, 2011; Cambridge, 2012).

The ability to use Web 2.0 tools is an integral part of school library practice in the 21st century (de Groot & Branch, 2009; Hallam & McAllister, 2008; Valenza, 2010, 2011). de Groot and Branch (2009) observed that many future school librarians lacked skills in the use of these tools and they suggest that school librarian preparation programs must integrate thoughtful use of these tools into the curriculum. Houston (2012) also identified a gap between the authentic use of Web 2.0 tools in school libraries and the use of the same tools in the school library preparation program where she served as a faculty member. Incorporation of social networking tools into the ePortfolio development process supports the assumption that school librarians are expected to demonstrate a wide range of collaborative abilities, both as team members and team leaders (ALA/AASL, 2010; Valenza, 2010).

The result of using Web 2.0 tools to create ePortfolios means that the student's work can easily be made public. Lieberman and Mace (2010) have identified this process as "making practice public." In their call for using social media and other Web 2.0 tools as part of everyday practice by educators, Lieberman and Mace (2010) state that, "Strong practices travel from practitioner to practitioner, and weak practices can't hide behind closed doors" (p. 85). They go on to assert that "educators need to develop the habits of having multimedia documentation tools close at hand" (p. 85) and share the belief that these practices can be transformative. Batson (2011) also suggests that ePortfolio creation can be transformative, if it is grounded in the social nature of learning within an authentic, technology-rich context. The concept of transparency, which is so much a part of personal use of Web 2.0 tools and social networking software, seems to be particularly critical in

the field of teacher education, where student artifacts can then be examined, adapted, and modified for use by other educators (Lieberman & Mace, 2010; Poelhuber & Anderson, 2011). However, such transparency brings with it the question of students' rights to privacy.

Open ePortfolios and FERPA

As educational institutions embrace the power of the Internet, cloud-based environments, and Web 2.0 tools for educational purposes, issues of student privacy need to be addressed. The Family Educational Rights and Privacy Act of 1974 (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal Law that was enacted to protect the privacy of student educational records. FERPA applies to all schools that receive U.S. Department of Education funding. While the initial intent of FERPA was to protect student records, the interpretation of FERPA has expanded. According to Diaz, Golas, and Gautsch (2010), most college and university legal teams "consider the education record to be a broad category that includes or involves study, not just the transcript" (p.2). Thus, student assignments created for coursework would be included in this broad definition of study.

Requiring students to post their work online makes their assignments public. The issues of student privacy in the digital world are increasingly complex and there are no single answers to resolve all scenarios. Optimally, institutions should be creating campus-wide policies rather than expecting individual faculty to solve FERPA concerns. However, one solution is for faculty members to include a FERPA statement in course syllabi that explains the students' rights. Students who do not wish to have their own work publicly identified can be given the option to use pseudonyms that they provide to their course instructors.

ePortfolios in Instructional Technology

The Instructional Technology program is in the College of Education at Georgia Southern University, which is a midsize regional university with an enrollment of 20,000 students (Georgia Southern University College Portrait, 2011). The Instructional Technology program is designed to provide educators with the skills to utilize emerging technologies in instruction. The program offers two different tracks: one track leads to K-12 school library media certification and the second track is designed for students desiring a technology coordinator position in K-12, business, or industry settings. Students in both tracks document their learning through ePortfolios; however, this case study focuses on candidates in the school library media track.

Implementation and Evolution of ePortfolios

During the 1980's and early 1990's, the Instructional Technology program at Georgia Southern University delivered courses to a geographically restricted population; most courses were offered face-to-face on the main campus. The service area for the university was designated by the Board of Regents to prevent state institutions from offering programs in each other's geographic domains thereby preserving a group of students uniquely assigned to a specific college or university service area. Occasionally, courses for the Instructional Technology program were delivered "at a distance." The faculty member assigned to teach the course would drive to a remote location and teach a face-to-face course to the group of students. Usually this was done to meet the needs of a cluster of students who were located near a common off-campus facility.

The first opportunities for colleges and universities in Georgia to offer remote instruction arrived in 1992, with the advent of the Georgia Statewide Academic & Medical System (GSAMS) network which was established to provide distance learning to rural areas of Georgia. GSAMS used interactive videoconferencing to meet the needs of educators and medical professional throughout the state. The 227-site network was the largest in the United States (Business Wire, 1995). Due to the number of available sites, GSAMS provided faculty with options beyond meeting students on campus. The Instructional Technology program at Georgia Southern University adopted GSAMS to teach several courses each year. Because of the large number of remote sites that were available, instructors could simultaneously offer a course to three or four different regions each semester. The instructor would meet a live face-to-face class, usually on the main campus, and the remote sites would receive live videoconferencing feeds. All course instructional materials and assignments had to be faxed or mailed between the students and instructor. By 1998

Blackboard learning management system was available for faculty at Georgia Southern University. The Instructional Technology faculty initially utilized Blackboard to provide resources for courses, eliminating the need for copying handouts and lecture notes. During this early adoption phase, few of the other components of Blackboard were incorporated into the design of the courses. Eventually the Blackboard learning management system was used for creating a hybrid environment and more components were included into course design; online course meetings began to take the place of face-to-face classes.

Up until the late 1990's, all master's degree programs in the College of Education were required to use a face-to-face, timed comprehensive examination as an exit assessment of student learning. Based on many broader initiatives, college faculty chose to make it possible for programs to develop alternative approaches to assessing overall student learning outcomes. The Instructional Technology program was one of the first to seek and receive approval to discontinue the use of the comprehensive examination in favor of a portfolio assessment approach.

Beginning in 1998, the development of an ePortfolio was instituted as a face-to-face capstone experience in the field-based practicum. Students were required to use PowerPoint to create a collection of artifacts and reflections that demonstrated mastery of professional association standards. These ePortfolios were stored on CD-Rom or flash drives. At the conclusion of their practicum, school library candidates were required to come to campus to present their ePortfolios to program faculty and their peers.

In 2003 the Instructional Technology program began to offer courses completely online. The migration of some courses was more challenging than others due to software or technology requirements. Faculty continued to address constraints and redesigned courses or selected freeware or shareware to meet course requirements. By 2007, all of the courses in the Instructional Technology program were being taught online and the program was renamed the "Online M.Ed. in Instructional Technology" with approval from Georgia Board of Regents.

When the program moved to an online format the service area restriction was lifted. The Instructional Technology program experienced incredible growth, from serving 65 students in the fall of 2008 to an enrollment of over 250 students in spring 2012. With the expansion of the program to a fully online format, it was no longer feasible to require students to come to campus to present their portfolios. Faculty members were challenged to find strategies for completing the capstone experience in an online format. The decision was made to use the two-way audio-video system (Wimba) that was embedded in the learning management system. Initially, students continued to rely on PowerPoint for the design of their ePortfolios. However, the cookie-cutter formula did not allow for much creativity and the use of PowerPoint was seen as limiting the abilities of the students to demonstrate the range of practice necessary for their ultimate performance on the job.

Our school library candidates' ePortfolios needed to provide visible evidence of skills in designing a reflective portfolio and of the students' abilities to select and utilize a wide range of Web 2.0 technologies to creatively communicate their knowledge and skills outside the "walls" of our learning management system. As a faculty, we met and took an inventory of our use of Web 2.0 tools across our program and were pleasantly surprised by the range of tools and purposes represented across courses in our program (Hodges et al., 2010). The faculty concluded that giving students the option to use a wide range of Web 2.0 tools to organize their portfolios and present various artifacts and reflections was the optimal choice. Students were reluctant to give up the security of using a familiar tool like PowerPoint; nevertheless, beginning in 2007, students were required to use Web 2.0 tools to create their professional portfolios. Synchronous presentations of the portfolios continued, using the audio-video system contained in the learning management system.

Current Status of ePortfolio Use

As a program within an NCATE-accredited College of Education, our program is required to align our assessments with relevant specialized professional association standards. The Instructional Technology Program uses a set of key assessments aligned with the ALA/AASL Standards that school library candidates are required to include in their portfolios. Inclusion of these key assessments guarantees that students have addressed all of the major required standards. Inclusion of the key assessments is merely a starting point. Students are given the freedom to select other artifacts from classes or from their practicum experience that further demonstrate how they meet the standards.

The students are prepared throughout their program of study for the final portfolio. Every required course in the program includes a statement in the syllabus stating that all students will be expected to create an ePortfolio during their capstone practicum course. The ALA/AASL standards are included in each course so students become familiar with matching the standards to course projects. Students are informed about which assignments are NCATE Key Assessments in the program and are encouraged to maintain copies of artifacts as they progress through the program. Detailed instructions on portfolio requirements are also available on the online Instructional Technology Program School Library Media Practicum Guide (http://iteclibrarypracticum.weebly.com/).

Although the students collect artifacts throughout their program of study, the actual construction of the ePortfolio had initially been completed during the final field experience course. In 2009, the decision was made that students would begin construction of their ePortfolios in the course Selection and Development of Instructional Technologies (FRIT 7230), taken prior to the final practicum experience. This early development introduces students to the concept of an ePortfolio, allows students the opportunity to reflect on the artifacts to include, and advances their technological skills in the construction of the ePortfolio. Students are provided examples of previous candidates' ePortfolios to gain an understanding of the "big picture." Examining other ePortfolios also provides strategies for improving their own ePortfolios (Bollinger & Shepherd, 2010).

Because students are candidates in an Instructional Technology program, faculty want them to use publicly available Web 2.0 tools rather than utilize available portfolio creation software such as LiveText or TaskStream. Students have the freedom to choose any wiki or website creator (PBWorks, Weebly, Wix, GoogleSites, etc) and they are encouraged to be creative in the overall design and feel of the portfolio. In FRIT 7230 students use Web 2.0 tools to create a professional introduction as well as introductions to two of their artifacts. Students are required to select Web 2.0 tools that allow for the inclusion of visuals along with audio. Commonly used tools include Voki (www.voki.com), Prezi (http://prezi.com/), Glogster (http://edu.glogster.com/), SlideShare (http://www.slideshare.net/), and Animoto (http://animoto.com/). Other lessons that have been learned during the evolution of our ePortfolios include utilizing different applications to overcome the difficulties experienced when opening large files and attachments within the ePortfolios. To address these issues, in 2009-2010, students were strongly encouraged to use tools like SlideShare (www.slideshare.net/), Embedit.in (http://embedit.in/), and Scribd (www.scribd.com/) to embed all artifacts in their ePortfolio. Students upload video productions and digital stories to Vimeo (http://vimeo.com/) or YouTube (www.youtube.com) and embed the productions into their portfolios.

There are limitations to the use of Web 2.0 tools. Some programs that were initially free of cost have become paid applications while others have disappeared. An additional limitation is that once students complete their practicum course, they can remove their ePortfolio. There is no guaranteed permanency for archiving candidate ePortfolios to use as class examples, or to save for NCATE evidence room artifacts.

As they progress through their coursework, students add artifacts and pages to support the inclusion of all of the ALA/AASL standards. By the time the students reach their final semester and prepare to take the practicum, they have a well-defined portfolio structure that includes the ALA/AASL standards, selected artifacts from all of their coursework, a professional introduction and philosophy statement, and reflections. As students complete various practicum requirements, they add the projects to their existing ePortfolios. They write reflective essays describing how selected artifacts enabled them to demonstrate mastery of each of the standards. Students are also required to maintain a blog of their practicum field experiences that is linked to their ePortfolio, as well as provide a link to their personal learning network (PLN).

Portfolio Assessment

The professional portfolio is evaluated as a component of the Practicum in School Library Media Centers course (FRIT 7737) using the Professional Portfolio Scoring Guide. The scoring guide (available for download from the Forms page at http://iteclibrarypracticum.weebly.com/practicum-forms.html) reflects elements from the practicum as well as the portfolio itself. Since the grade in FRIT 7737 is Satisfactory/Unsatisfactory,

every element on the scoring guide must be rated as acceptable for the candidate to earn a grade of Satisfactory and complete the program (http://coe.georgiasouthern.edu/lthd/itech.html). The rubric focuses on the quality of reflections that accompany the artifacts, the creative use of technology, and on the ability of the students to present their portfolios during the synchronous presentations.

Lowenthal and Thomas (2010) suggest that public performance is the cornerstone of "real world" learning. During the final week of the field-experience practicum course, candidates present their ePortfolios to classmates and a team of program faculty. Typically at least three members of the instructional technology faculty attend the portfolio presentations and participate in the evaluation, although the final evaluation is completed by the FRIT 7737 instructor. The presentations are synchronous and conducted through the course learning management system utilizing a live, interactive, audio, and video virtual classroom environment (Wimba). This "public performance" requires students to identify the artifacts chosen for each standard, demonstrate the artifacts that indicate the greatest professional growth, and reflect on how they are meeting the required national standards. The reflective component of the ePortfolio is a key expectation for all graduates of the Instructional Technology program. The ePortfolios become visible evidence of each candidate's skills in design of a reflective ePortfolio and their abilities to select and utilize a wide range of Web 2.0 technologies to communicate mastery of the standards to faculty and classmates.

Conclusions and Next Steps

The transition to the use of Web 2.0 tools has led to increased faculty interest in the concept of transparency in online learning (Dow, 2008). One side benefit of this transparency is that the students have easy access to one another's portfolios. We know from conversations with the practicum candidates and through reading discussions posts that students often exchange helpful advice on technical difficulties, and engage in informal peer review of one another's portfolios. However, we do not know how frequently this occurs or what affect it has on the quality of ePortfolio development. Developing an ePortfolio is a complex, time-consuming endeavor and we are constantly seeking new ways to provide support and guidance to the students. Beginning in the fall of 2011, we scheduled a series of checkpoints to evaluate the progress our candidates were making toward finalizing their ePortfolios. We also relocated the instructions for the ePortfolio within the program's online practicum guide (http://iteclibrarypracticum.weebly.com/) so that students would find guidance in a central location. Our next endeavor is to formally integrate a peer review process into the practicum with the intention that this will further assist students as they complete the ePortfolio.

The ePortfolio design, development, and delivery process currently implemented in the Instructional Technology School Library Media Certification program has produced high quality representations of student learning. As the capstone experience in our program that is used to determine whether students have mastered the standards specified for certification and graduation, the ePortfolio is a high stakes requirement. With the rapid growth experienced by the program, faculty were concerned about the ability to facilitate large numbers of portfolio presentations but that has not become an issue. Faculty are frequently asked about allowing students so much choice in the selection of tools for portfolio creation and artifact presentation. Again, this has not been an issue. Students frequently utilize each other's expertise to solve challenges encountered when using specific tools. The public, transparent qualities of our portfolio system ensure that students who complete our program understand the power of social networking and Web 2.0 tools for learning, communication, and collaboration, as well as tools for outside of class social interaction and enjoyment. The experience of creating and presenting their ePortfolios provides students with a high level of self efficacy and confidence in their abilities to master new tools, a disposition that is critical to their future success in the ever-changing world of school libraries.

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