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THE USE OF ePORTFOLIOS IN EVALUATING THE CURRICULUM AND STUDENT LEARNING

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Portfolios can foster the integration of theory, action, self-reflection, and assessment. Electronic portfolios (ePortfolios) extend this concept by acting as a “content-management system” that facilitates the collecting, considering, sharing, and presenting of learning outcomes with and to others via a digital medium. This article describes the systematic examination of an ePortfolio application under development and illustrates its potential usefulness to not only facilitate and assess individual student learning, but also aid curricular assessment. Our evaluation uncovered organizational, curricular, learning, logistical, and technological issues involved in moving from a linear approach to teaching and learning toward an integrated systems approach.
“content-management system” (Jafari, 2004, p. 40) that facilitates the process of collecting, reflecting on, sharing, and presenting learning outcomes and other professional accomplishments via a digital medium. Rather than merely changing the format of content (paper to digital), ePortfolios radically transform portfolios from a “thing” to a process or processes. The ramifications of this transformation recast earlier research findings and inform the design for ePortfolio systems in development.

This article presents a systematic review of the process we used to create an ePortfolio application within a school of social work. We describe our initial data demonstrating the usefulness of an ePortfolio infrastructure that not only facilitates and assesses individual student learning but also aids overall curricular assessment. Significantly, our ePortfolio design integrates curricular, cocurricular, and professional practicum experiences. We embed the presentation of our findings and experiences within existing literature and discuss our future plans based on our experiences thus far.

**Literature Review**

The use of portfolios has been discussed in the social work literature pertaining to professional development (Elliott, 2003), curricular assessment (Spicuzza, 2000), and integrating the classroom-field learning experience (Alvarez & Moxley, 2004; Risler, 1999; Schatz & Simon, 1999). Many disciplines have addressed practice competencies in the curriculum (see, for example, Edwards, 1987; Margolis et al., 2000; O’Sullivan & Greene, 2002; O’Sullivan, Reckase, McClain, Savidge, & Clardy, 2004; Volland, Berkman, Phillips & Stein, 2003). In higher education the use of ePortfolios has been discussed as an aid to career development (Greenberg, 2004; Heath, 2002), a way to enhance learning experiences (Martin-Kniep, Cunningham, & Feige, 1998; Wolf & Dietz, 1998), and a way to assess student learning and curricular assessment (Ramey & Hay, 2003; Ring & Foti, 2003).

Specific to relevant learning theories, portfolio-based learning could be viewed as occupying the highest form of knowledge and skill integration (Anderson, Krathwohl, & Bloom, 2001) in that students would be reflecting on the development of all of their professional skills in the process of creating their emergent professional identity. Examples of this application of portfolio-based learning can be found in the existing portfolio research. Student feedback from the portfolio development process indicates that the procedure itself made them more aware of their own learning processes and how they needed to take control of their learning activities to make them more meaningful for personal and professional growth (Ashelman & Lenhoff, 1994; Wilcox & Tomei, 1999). In parallel, as faculty members review portfolios they also begin to have a metacognition of the curricular process and reflect on the curriculum with an eye toward needed curricular changes (Ashelman & Lenhoff, 1994). We do not suggest that these effects, linked to the social constructivist model of self-reflective activity (Alvarez & Moxley, 2004), are unique to a portfolio process; for students some of these experiences occur in field seminars or a capstone course, and for faculty they may occur in curriculum committees or faculty workgroups.
However, overall integration is unlikely in these settings alone, and the portfolio process may be a tool that can facilitate that practice.

**Types of Portfolios**

Although portfolio-based learning may be the motivation for some portfolio projects, there are many types of portfolios that may or may not incorporate aspects of that framework. Existing research has focused on the following types of portfolios:

- **Assessment or evaluative.** These portfolios are used to assess student performance in the program (Ashelman & Lennhoff, 1994; Brown, 2004; O’Sullivan et al., 2004; Spicuzza, 2000; Stern & Kramer, 1994) or in aggregate for curricular evaluation (Fitzsimmons & Pacquiao, 1994).

- **Reflective.** Rather than evaluate outcomes, these focus instead on the student’s ability to be a reflective practitioner as demonstration of professional growth (Prince, 1994). For example, a social work student in a counseling techniques class might reflect on his or her personal reactions to using various methods.

- **Integrative.** This type combines the prior two and focuses on integrative, facilitative, and evaluative processes in which students can identify sources of insight, clarify values and goals and, most important, dialogue with and receive feedback from others (peers and faculty) to integrate critical knowledge with action, reflection, and demonstration (Wilcox & Tomei, 1999; Peet, 2005). For example, in a social work capstone course, students might be asked to share their philosophy statements, in which they are asked to integrate their theoretical orientation with their practice methods and state how those two relate to their professional values.

- **Structured.** In these portfolios a predefined organization exists (i.e., scaffolding) for work that is yet to be created. Learning objectives in most course syllabi are an example of scaffolding. In portfolio work it is the expectation that certain types of artifacts are to be collected, perhaps demonstrating specific competencies, or that specific questions are to be addressed with those artifacts (e.g., an artifact summary). Examples might include a psychosocial assessment, organizational analysis, or a field learning agreement evaluation form; all assignments students typically produce.

- **Process or learning.** The organization of the work evolves as the work is created. This involves organizing work across and beyond courses, and feedback may be sought from mentors or other outside reviewers. It is the most personal and unstructured type of portfolio (Barron & Sartori, 1994; O’Sullivan & Greene, 2002; Schatz, 2004).

- **Showcase or professional.** These portfolios are designed specifically to present a student’s work, usually in a public setting (e.g., to potential employers). As noted earlier, it is this “end-state” product that people frequently associate with the term portfolio.

Although structured portfolios specifically use scaffolding, most portfolio processes include some kind of scaffolding to help guide...
student development. Scaffolding may be especially instrumental in helping students reflect on and integrate their various classroom and field experiences (Alvarez & Moxley, 2004; Brown, 2004; Schatz, 2004).

**Modes of Delivering Portfolio Instruction**

The use of portfolios can be introduced at the beginning of the educational process (Jafari, 2004) so students can learn how to select and reflect on early assignments to gain a better sense of their growth and development as they matriculate through the curriculum. Spicuzza (2000) discusses this approach, in which students are asked to think about what competencies they would like to attain in each assignment. More typically, portfolio courses are offered as an elective during the last term (Barron & Sartori, 1994; Schatz, 2004) or as a required capstone course (Alvarez & Moxley, 2004; Spicuzza, 2000). Alternatively, no course may be offered at all; rather, programs distribute handouts to students during orientation with reminders through the year to identify artifacts—that is, course assignments or other examples of their work—to be reviewed at the end of the year with a faculty advisor (O’Sullivan et al., 2004).

**Electronic Portfolios**

Although the literature suggests the value of the portfolio process, the logistical issues of managing all the artifacts and notebooks associated with the process can be quite onerous, especially from the institutional perspective. The development of ePortfolios provides one way to address these demands. Several projects/companies have undertaken electronic portfolio development, such as Chalk and Wire, http://www.chalkandwire.com; LiveText, http://college.livetext.com/college/index.html; iWebfolio, http://www.nuventive.com/index2.htm; IMS Global, http://www.imsglobal.org/ep/; and eFolio, http://efolio minnesota.com. For a more exhaustive discussion of ePortfolios in general, please see http://www.educause.edu/645?PARENT_ID=475.

Our university is exploring the use of the Open Source Portfolio (OSP) introduced by the University of Minnesota, Duluth, in 1995. The OSP is an open-source project freely available at http://www.osportfolio.org and is part of the larger Sakai Project comprised of more than 96 universities across the United States. The University of Michigan School of Social Work (SSW) is collaborating with other professional schools and several programs/divisions at UM to explore the use of this platform. The OSP application is conceptualized in the following diagram reproduced with permission by the RSmart group (Coppola, 2006). RSmart is a professional support organization that assists educational institutions to deploy, integrate, update, manage, train, and support open source software applications focusing on Sakai and Kuali, http://www.rsmart.com.

The diagram in Figure 1 illustrates two separate processes not always distinguished in the literature pertaining to paper-based portfolios. For the portfolio creator/owner (circle on the right), it begins at “collect” where students gather their work. The work might be gathered by a course management system (CMS), to be discussed later. The students then “reflect” on selected materials, which can be an unstructured process or a structured process using scaffolding (i.e., spe-
cific guiding reflection questions), with or without peer feedback. What the students choose to show to others is selected at the “design” step, and variations on what is shown can be developed accordingly. The design phase is also integrative in nature—it prompts students to connect pieces of their learning in specific ways. What the “public” sees occurs at the “publish” stage, and what is seen can vary by audience (Portfolio Guest) or by purpose (i.e., whether it be for assessment, reflection, integration, or showcase purposes).

Concurrent with the processes on the right are the curricular processes in the triangle on the left. A “guide” introduces the notion of structure via scaffolding. That is, students could be asked to “collect” certain types of artifacts (e.g., demonstration of competencies), and/or they could be asked to “reflect” on these artifacts by being asked specific questions. We asked our students to identify issues, tasks, insights, and skills learned for their artifacts. Note that the guides can be organized around a course, practice areas or methods, or Council on Social Work Education competencies; by a student-created framework; or by any combination thereof. A “review” of the artifacts takes place and assessment is given with feedback or a grade. Finally, a report writer in OSP v. 2.2 allows program administrators to “analyze” portfolio data by any number of means. The common interest group (CIG) coordinator represents the management of the portfolio development.
process. There could be many CIG coordinators per student, reflecting the various curricular paths our students travel. For example, a CIG might be a family violence workgroup, and they would identify typical artifacts a student might want to include in a portfolio. The same might be said of a community organizing CIG, a child welfare CIG, and so forth. Finally, the group responsible for the computing environment would serve as the program administrator.

The ePortfolio as a Teaching Method

With the value of various aspects of portfolio-based learning established by prior research, and given multiple possibilities for process designed, we systematically examined the degree to which an electronic portfolio might serve or facilitate those processes. Specifically, we sought to answer the following questions.

- Can ePortfolios facilitate the assessment of competencies? If so, can they easily identify the source of learning, whether it is the classroom, field, or other experiences?
- What policy and procedural issues need to be addressed that are specific to the use of ePortfolios?
- What type of information system architecture would best serve the implementation of ePortfolios?
- What scalability issues need to be considered, including support issues regarding hardware/software, level of demand, and so forth?
- How should ePortfolios be designed so that portfolio learning can be integrated throughout the curriculum?

Project Description

The University of Michigan School of Social Work (SSW) initiated a curricular focus on privilege, oppression, diversity, and social justice with associated competencies in April 2001. Preliminary evaluation results from that initiative showed a lack of integration and application of these concepts as a major barrier to student learning. Thus, a paper-based portfolio process was implemented in April 2003, and it appeared to facilitate the acquisition and application of these competencies (Peet, 2005). At about this time, the University of Michigan began exploring the use of ePortfolios. We assessed the possibility of using an ePortfolio process to promote integrative learning and the achievement of competencies.

Implementation Process

This project used a proof-of-concept approach in exploring the use of the ePortfolio technology. A proof-of-concept prototype could be considered a very preliminary mock-up built to demonstrate whether a solution to a need is feasible (Satzinger, Jackson, & Burd, 2004). This approach is a form of applied research frequently employed in developing software applications and helps determine whether an approach is workable within organizational constraints. Proof-of-concept research is akin to case study research, and several of the same techniques are used (Yin, 2003). Many ePortfolio software applications available today promise to solve various educational needs; thus, proof-of-concept testing is used to assess these promises. Most important in this situa-
tion, proof-of-concept testing clarifies what needs to be done to successfully integrate the application into the existing information system environment. Jafari (2004) offers a diagram to help conceptualize the process (see Figure 2).

Although we focused primarily on the functional and technical requirements with some of the human aspects, all of the phases take place in an organizational context that must be kept in mind as the data is evaluated.

The use of case study approaches in designing information systems has been described in numerous studies (see, for example, Lee, Liebenau, & DeGross, 1997). As such, we gathered data from various sources: written feedback on the various ePortfolio interfaces; focus groups with ePortfolio users; observational data as students worked at the computer noting usability issues; analysis of student portfolio artifacts; feedback from faculty concerning portfolio based learning; feedback from field educators regarding the ePortfolio platform; and comparisons of the efficacy of different ePortfolio database hierarchies in facilitating students’ understanding of their learning. The number of pilot groups, faculty, and field instructors was small; therefore, all note taking and data analysis was done manually.

The data analysis followed the steps outlined by Creswell (2007) and included noting issues identified in the literature; note taking; summarizing notes in reports; identifying recurring words that evolved into developing themes; categorizing these themes as they related to ePortfolio application issues, student learning issues, curricular issues, and so forth; relating these themes back to the literature; identifying new issues; and, finally, relaying the findings to various audiences.

Specifically, the two lead authors took extensive notes both during and after meetings/classes with the users. We reviewed the notes each week to clarify the impressions we were receiving regarding student feedback. All impressions were then shared with the students to make sure we understood their sentiments and to clarify any thoughts or concerns, a form of member checking (Padgett, 1998). Our ability to understand student needs was crucial, because aspects of the software were modified based on their feedback. We also asked for their overall feedback periodically and especially at the last class. Similar, but less frequent, feedback was solicited from faculty and field educators.

Because context is a crucial aspect in proof-of-concept research, we were careful to

**FIGURE 2. The System Development Process**

<table>
<thead>
<tr>
<th>Conceptual Design</th>
<th>Implementation Plan</th>
<th>Software Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Functional Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Technical Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Human Aspects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Computer Aspects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Business Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Daily Operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Software Upgrade</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
note the setting in which our project took place and how it was similar or dissimilar from a typical classroom or learning experience (Yin, 2003). The study took place in both ePortfolio seminars and a specially designated field seminar. The latter met for 2 hours every other week for 7 weeks. Participation in the portfolio seminars was voluntary. This yielded a convenience sample of 38 students.

Pertaining to specific student portfolio artifacts, a content analysis was conducted to determine how well competencies were achieved. In producing the artifacts, students were asked to identify four areas of learning: issues, tasks, insights, and skills learned. These areas became the scaffolding of the portfolio-based learning process, serving integrative and reflective functions vital to the educational process.

Because we were working in a digital medium, we were also able to obtain an aggregate count of all artifacts through the portfolio database by using SQL statements, a specialized computer language, developed by the database administrator. In addition, separate data fields were created for the issues, tasks, insights, and skills learned, which allowed us to obtain a count on those specific competencies for each artifact, again using SQL statements. This assessment yielded a unique understanding of how (i.e., through specific courses and/or field work) students were acquiring competencies. This approach differs from traditional survey methods that ask students in which classes they gained certain skills; instead, query results told us which classes the students thought were producing newly acquired skills.

Student discussion and feedback via focus groups and surveys enabled us to identify the types of barriers the students faced, including technical challenges, in engaging both in portfolio-based learning and in portfolio creation.

As part of the project we also developed a manual for students on how to populate their own portfolios; a report to other professional schools on the experiences and results of the pilot process; and a compendium of policies, procedures, and organizational issues surrounding the use of ePortfolios.

Findings

In reviewing our notes, discussion from feedback sessions, and observations of the students while they worked with the application, we began to identify recurring issues and themes. For us, it was helpful to systematically examine the ePortfolio as a teaching method in terms of student level data, curricular level data, and technical issues.

Student Level

We examined whether the ePortfolio process itself had the same integrative effects as paper portfolios. The general sentiment of students’ feedback seemed to indicate that this was the case. In reflecting on the ePortfolio seminar, students shared the following.

- “Helped me organize my thoughts/strategies by tying together seemingly disparate bits of social work school experience.”
- “In retrospect I’m more concerned with professional self-assessment as a personally enriching activity.”
- “It is a good class for helping to make sense of all [my] other classes, undergrad experience, jobs, and fieldwork experi-
ence. The process helps to make sure [my] MSW experience [was] more cohesive.”

However, our primary focus was on the electronic aspects, and that feedback was more along the lines of this comment: “I like the guidance on how to create artifacts and [philosophy] statement, but the ePortfolio itself, the finished product, is sort of ugly.” In addition, “Students like me will possibly have a harder time...with the on-line process. But, I learned eventually.” Others simply found the ePortfolio application difficult to handle. Nonetheless, those aspects did not seem to interfere with the actual portfolio process, and that was reassuring.

Most interesting was the lack of connection between how we designed the initial framework to hold the portfolio contents (i.e., artifacts) and how the students wanted the framework to be organized. Most of our curricular initiatives took place in our practice area courses. So the initial artifact placeholders were titled “children and youth,” “mental health,” “aging,” and so forth. The students, instead, requested a structure organized around specific social work roles (clinician, evaluator, advocate, etc.), because that is how they present themselves to prospective employers. This was an unexpected finding and something we would not have discovered if we had not engaged in this proof-of-concept research.

Curricular Level

A desire shared by all the students was to have a more transparent relationship between class assignments, objectives to be learned, and competencies to be achieved. As a faculty we all tacitly assumed this to be occurring, but the portfolio process revealed that it happened in a very uneven fashion. In some classes the linkages were readily observable, in others they were present but students had difficulty discerning them, and in still other situations there were no links between the classroom and the field.

This feedback was supported by the most interesting capability of the OSP/ePortfolio technology, the ability to perform queries. Our portfolio artifacts and summaries were in a digital medium (thus creating a repository of artifacts); therefore, we could request information from the database using a specialized computer language (in this case, SQL). Once the query was written, we could find out the number and type of artifacts produced by students in a matter of milliseconds. Table 1 shows the results from a subgroup of 17 students who produced artifacts. Note that the artifacts collected initially were those with readily available “products,” which we believe is related both to our phase of development and the interests of our initial group of volunteers.

We then executed an additional query on the “skills learned” database element and performed an analysis of that text to see the degree to which students articulated competencies related to social justice skills. A content analysis (Weber, 1990) was performed to assess whether the text fulfilled the criteria of being an application of one of the social justice competencies. In essence, the assessment of a student’s work was similar to grading a paper. The difference in using an ePortfolio, however, was that selected portions of text across students was easily identified, retrieved,
aggregated, and assessed. Those results can be found in the third column of Table 1. Tabulating which course and field-related materials actually end up in a portfolio (Alvarez & Moxley, 2004; Spicuzza, 2000) proved to be extremely informative for our curriculum planning purposes. Note also that the students struggled to identify evidence of social justice competencies within their artifacts. This may be because it is a less tangible concept than practice, policy, or research.

We were particularly surprised by the lack of artifacts from the intervention category and students’ field settings. Focus group follow-up with these students with regard to the lack of intervention artifacts revealed that some existing assignments were ideally suited for artifacts whereas others were more difficult to reframe as artifacts. This information is assisting us in identifying key assignments across various courses that we may want to highlight (Barron & Sartori, 1994; O’Sullivan et al., 2004). Perhaps of more concern were artifacts that were very similar in nature but from different courses, a possible indicator of unnecessary duplication of learning activities across courses (Barron & Sartori, 1994). As for the social justice skills, we have never set criteria for that level of analysis or how and where it should occur in the curriculum; these results will provide a benchmark for future work.

Regardless, the querying capability made this type of analysis much more practical; working with paper-based portfolios across all of our students \((n>600)\) would have required many more hours of work. Although it should be viewed primarily as a tool for student growth, an analysis of portfolio artifacts over time by faculty means the portfolio process can also serve as a “diagnostic tool” (Knight & Gallaro, 1994, p. 1) to aid in assessing program effectiveness. Soliciting feedback in the portfolio seminars helped us generate a method that created a “forum” where students and faculty could discuss their shared

### TABLE 1. ePortfolio Database Query Results

<table>
<thead>
<tr>
<th>Artifact Type</th>
<th>Count</th>
<th>Social Justice Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocacy</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Assessment</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Development</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Intervention</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Management</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Community organizing</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Planning</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Policy</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Program development</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Program management</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Research and evaluation</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>
responsibility for learning. The forum provided specific feedback to faculty suitable for curricular evaluation and/or revision (Ashelman & Lenhoff, 1994). Examples of this dialogue are typified by comments such as “make assignments portfolio-ready” and have assignments incorporate aspects of “academic AND professional development.” Having a systematic manner for gathering and processing this type of feedback will assist the SSW in accreditation processes, as found in other professional programs (Barron & Sartori, 1994; Stern & Kramer, 1994; O’Sullivan et al., 2004).

Technical Level

Students gave a considerable amount of feedback about various technical aspects of the ePortfolio application. Their first concern was the privacy and confidentiality of the information. Somewhat related was general confusion about who could see their material. Second, students had difficulty differentiating the collection process of portfolio development from the publishing process (i.e., showcase or professional portfolios). This confusion is partly a result of the conflation that occurs, because such a distinction cannot be made with the traditional paper-based portfolio. With an ePortfolio, students can collect their material digitally and then designate what will be published or shared with others without duplicating efforts. Finally, they felt the portfolio application needed to be integrated into the existing university course management systems (e.g., Blackboard, WebCT, Moodle, Sakai); otherwise, they would have to duplicate collection efforts. Digital course management systems already allow for the collection and storage of assignments that may become portfolio artifacts. For our pilot project we used a standalone version of OSP (v. 1.0 and v. 1.5). In addition to the student feedback about the “hard to use” appearance of the product, it required the students to have a separate login, and existing assignments/papers had to be uploaded both to our course management system (cTools) and the ePortfolio. The current version of OSP (v. 2.2) is fully integrated into the universitywide course management system (c-Tools) and will be the version used in our future research.

Discussion

We began with several questions related to evaluating the ePortfolio as a teaching method. The answers to these questions as gained from this project incorporate the student level, curricular level, and technical issues data into the larger educational context.

Can ePortfolios facilitate the assessment of competencies? Both our content analysis (see Table 1) and feedback would seem to indicate that it can. The students reported that the process was extremely helpful in assisting them in integrating and reflecting on their learning. In addition, the queries performed on the database provided a quick, cross-sectional assessment of competency achievement for all the students. On the other hand, we do not assume that all competencies are captured in student written assignments. Some competencies are assessed via role-plays and presentations. At best, only a portion of the total competencies may ever be captured via portfolios, but those that can or should be captured need to be the subject of thoughtful deliberation. More important, we could not answer any of these questions in an
expeditious manner if the data were not available in a digital medium.

Which policy and procedural issues need to be addressed that are specific to the use of ePortfolios? Most of these concerns involved confidentiality and legal issues. As with all student information, guidelines pertaining to the Family Educational Rights and Privacy Act need to be followed if an institution wants to share student work for accreditation purposes (Jafari, 2004). OSP v. 2.2 has built-in mechanisms to de-identify student work at the aggregate level. De-identification at the artifact level needs to occur through guidelines to the students as they prepare their artifacts. With paper-based portfolios this would be a time-consuming matter, but it can occur relatively simply with ePortfolios. Beyond this, an ePortfolio enables students to keep artifacts and private information about struggles related to personal/professional growth and development in the same place, something not possible with paper-based portfolios if students believe all the content of their portfolios will be viewed by others (Alvarez & Moxley, 2004). Students viewed the ability to control access to their portfolio materials as highly desirable and a clear advantage over a paper portfolio, which they think of as being “turned over” to someone else. With an ePortfolio, they “grant access” to their work.

What type of information system architecture would best serve the implementation of ePortfolios? This issue was the most enlightening aspect of our research. In sum, it was the intersection of analog versus digital ways of thinking about information. By analog, we mean a portfolio that is conceived as a discrete whole (e.g., an assessment portfolio, a professional portfolio), whereas digital infers the capability of identifying and manipulating discrete parts of the portfolio or the portfolio process. For example, a student can create different types of portfolios digitally (e.g., showcase, reflective, assessment) using the same underlying artifacts, whereas a paper portfolio would require the physical duplication of artifacts. This conflation in conceptualization is perfectly understandable in light of portfolios historically being paper products with paper being an analog tool. Electronic portfolios, on the other hand, are by their very nature digital which makes them suitable for manipulation. This theme is most evident when discussing portfolio “process issues,” in which the processes are further subdivided into human aspects and technological aspects. For example, designing the portfolio process, creating artifacts, or providing feedback is best done by humans. However, collecting and organizing information, culling information from portfolios, or instituting a scaffolding framework is most efficiently facilitated by technology.

Most onerous would be to digitize an analog process. For example, some authors believe that the electronic showcase portfolio does not demonstrate the developmental process (see, for example, Brown, 2004). Perhaps the specific application employed in Brown (2004) did not capture the integrative and reflective portfolio processes, but that may be a limitation of the particular application and not ePortfolios as a whole, in our opinion. A corollary to this process would be paper-based portfolios in which students have to select what goes into the portfolio and what gets excluded (Alvarez & Moxley, 2004; Schatz, 2004). That is a moot issue with
ePortfolios, because a student’s repository area can be as expansive as the student desires. Indeed, those artifacts excluded from traditional portfolios because they do not present a student in a favorable light (what one would want for a showcase or professional portfolio) may be the artifacts that could be best served by additional reflection and feedback from peers or mentors.

Another area of conflation in the literature is the notion of who owns or who should be the custodian of a portfolio. In some programs students hold their own portfolios (Prince, 1994), whereas other schools keep the portfolio as part of the student’s official school files (Fitzsimmons & Pacquiao, 1994), and in still others the advisor keeps the portfolio and the student is given a copy (Ashelman & Lenhoff, 1994). Discussing the subject in this manner is reflective of analog thinking about what one considers a portfolio to be. In a digital environment, clearly the students own their own information, can provide evidence of their learning (if required) through various scaffolding techniques, but then can “showcase” their portfolio to whomever they wish. A student may wish to download his or her portfolio to a digital medium, such as a flash drive or CD, or may agree to use the application postgraduation as alumni.

What scalability issues need to be considered, including support issues regarding hardware/software, and level of demand? This area of our research is most lacking perhaps because of our small sample size relative to our total student body. Nonetheless, the most significant finding that we anticipate will continue to play out over time is that the ePortfolio system must be integrated into the institution’s course management system (Jafari, 2004). Our project ran a stand-alone version of the OSP application that required students to have a separate login from their university login and to copy all their assignments from the university’s file management system into the OSP application. Although less tedious than physically copying assignments required for a paper-based portfolio, anything that can be done to make the process more seamless with students’ handling of assignments and other papers would be clearly advantageous. We will continue to explore this issue in the next OSP version that is integrated into our CMS.

Faculty need to start viewing the CMS as an integral aspect of the student’s learning experience. Heretofore, some instructors may have viewed the CMS as a tool for their own use. When ePortfolios become integrated into a CMS, then the power balance may need to shift to recognize it as a shared tool with students. As such, faculty use of a CMS may need to become mandatory, not optional, and some faculty will need considerable technical support to manage that change.

How would ePortfolios need to be designed to integrate portfolio learning throughout the curriculum? Here again, our conclusions must be tentative, but one perspective clearly stands out: A portfolio or portfolio-based learning as a teaching method must be viewed as a distributive process. Related to the earlier analog versus digital discussion is the notion of distributive processes. It is understandable that singular assessors are most often referred to in a paper-based portfolio system when a student’s portfolio is evaluated in a capstone course (Brown, 2004; Schatz, 2004; Wetzel & Strudler, 2005) or when an advisor has to
review all portfolio contents (Ashelman & Lenhoff, 1994) to see whether a student meets the requirements for graduation. It requires considerable time to review and provide feedback, which is one of the most common complaints about the traditional portfolio process (see, for example, Fitzsimmons & Pacquiao, 1994). This problem becomes magnified when multiple assessors are used (Spicuzza, 2000), and some programs resort to cloistering these reviewers at the end of the term to review all student portfolios (Alvarez & Moxley, 2004). Such a process may work for some programs, but with a student body of more than 600 students such an approach would not be feasible. In addition, some faculties question why we evaluate student work that has already been graded.

Because proof-of-concept research was a key feature in our examination, we felt we needed to address these workload fears. Therefore, we envision a distributed process. First, the assignments/artifacts would be graded as usual by course instructors to assess achievement of learning objectives and competencies. Information from the scaffolding process (i.e., text students enter regarding the issues, tasks, insights, and skills learned in producing the artifacts) would be queried and evaluated by various faculty workgroups. For example, a practice area workgroup dealing with aging could query the “issues” or “tasks” database elements from selected courses to see how well students identify issues related to aging. A practice methods workgroup could query the “skills learned” to see what types of competencies students are articulating. This process could be done on a random sample of students or all students for some areas. Most important, this data can be accessible online, precluding the need to copy parts of the portfolio or to have committee members at the same place at the same time. Finally, curricular workgroups involving field instructors may want to sample various artifacts or artifact summary fields (scaffolding) to assess how competencies across the curriculum are being represented in student work, looking for horizontal integration (i.e., assessing for gaps or duplication in the curriculum in any given time period) and vertical integration (i.e., over time building on competencies moving from foundation to advanced courses). In a sense this would multipurpose artifacts and would leverage their informative capability.

Finally, the notion of portfolio learning has to extend beyond graduation. We anticipate offering ePortfolio access to our alumni for two reasons. One, it increases buy-in to the process in the first place if students know they will have continued access after they graduate (Brown, 2004; some schools retain portfolios if they are used for summative evaluations). It also reinforces the message if we truly believe that maintaining a portfolio can have long-term personal and professional benefits relative to individual and professional development (Greenberg, 2004). We would also be curious to find out which types of artifacts or competencies the former students share with others in their first few years as professionals.

**Implications for Social Work Education**

ePortfolios can be invaluable tools in helping our students acquire the process knowledge and skills necessary for clarifying underlying values and goals within specific professional
contexts (i.e., therapist, manager, organizer, activist) and developing effective evidence-based practices to meet those goals throughout their professional careers via the competencies acquired in coursework (assuming they are evidence-based). Portfolio-based learning as a teaching method should not be confused with the portfolio development process, whether it is paper-based or electronic. That is (returning to Figure 1), portfolio-based learning is most aligned with the collect phase, reflect phase, and some of the design phase, whereas the portfolio development process focuses more on what people see as being produced by those phases in the balance of the design phase and moving into the publish phase. Again, following the notion of having distributive processes, our curricular focus needs to be directed toward how our students will want to collect and organize their work supplemented with opportunities for integration and reflection. Students, in turn, will then be able to construct their professional self and share their work with others, first in obtaining employment, and thereafter as they continue their growth as professionals.

**Conclusion**

Our systematic examination of the ePortfolio as a teaching method uncovered organizational, curricular, learning, logistical, and technological issues and challenges involved in moving away from a linear (analog) approach to teaching and learning and toward an integrated (digital) systems approach. Students developed as “self-authors” who integrated competencies across courses, connected course knowledge and skills to field work, and engaged in ongoing self-reflection and peer review processes. Significant gaps between students’ course experiences in the SSW and their professional internship/field experiences in the community were identified. The prototype of a process for evaluating and auditing the curriculum of the SSW as a whole, both internally and externally, was examined. Specifically, the use of ePortfolios requires faculty members to generate more precise competencies, objectives, and goals for student learning. One of the biggest outcomes from the project was that it reaffirmed what Ackoff, a noted systems thinker, concluded about the American educational system: “It’s not important what students learn, but that they learn how to learn and that they are motivated to do so” (Ackoff, 1993).

**References**


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