Learning Outcomes Assessment via Electronic Portfolios

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Abstract

AU :1

Accreditation agencies both institutional and professional (such as the American Library Association) have asked educators to demonstrate student learning outcomes for every academic program that they are assessing, and that they use the data gathered for continuous improvement of programs. This chapter reports on the development of an electronic portfolio (ePortfolio) structure for accomplishing an assessment process within a school of library and information science. From the student side, the portfolio prompts them to select work that they feel is their best effort for each program outcome such as "assist and educate users." From the faculty side, all items for a given outcome can be downloaded and assessed quantitatively and qualitatively so as to arrive at an understanding of how well the program as a whole is doing, with sufficient detail to guide specific improvement decisions. During design, researchers employed a sequential qualitative feedback system to pose tasks (usability testing) and gather commentaries (through interviews) from students while faculty debated the efficacy of this approach and its place within the school's curricular structure. The local end product was a usable portfolio system implemented within a course management system (Oncourse/Sakai). The generalizable outcome is an understanding of key elements necessary for ePortfolios to function as a program-level assessment system: a place for students to select and store artifacts, a way for faculty to access and review the artifacts, simple aggregations of scoring and qualitative information, and a feedback loop of results into program design for improved student learning.

Keywords: Program evaluation; accreditation; electronic portfolios; student learning outcomes assessment; professional education

AU :2

I. Introduction

One of the most significant movements in higher education over the past 20 years has been an increased emphasis on accountability in terms of assessment and outcomes measurement. No longer could institutions base reporting and

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rankings on quantities of inputs or resources, such as student-faculty ratios, percent of faculty possessing the Ph.D., grade point averages of applicants, or numbers of enrollees. Instead, federal, state legislative, and popular (consumer) sentiment turned towards asking what colleges and universities were accomplishing with and for their students: namely outcomes, not outputs. The US Department of Education, which recognizes accrediting agencies, began requiring that the institutions and programs they review document the evaluation of student learning outcomes with assessment in order to have a record of data-driven improvements. This was based on longstanding guidelines (from 1965), and formalized in amendments to US federal law that was passed in 2008.

Assessment itself has always been a vital part of academia in two important ways: individual accomplishment on specific tasks (papers, projects, tests: assignments and course grades) and the success of graduates (employment and subsequent accomplishments). These were individually oriented assessments, with little explicit linkage between the two. Professors assessed in-course performance, and program chairs (and marketers) cared about how their graduates fared.

A new component in assessment focused on something broader than the individual student, and was more closely tied to how a program worked, namely how a *program* is doing overall, in terms of students' accomplishing specified outcomes. For example, individual students may pass or fail a general exam. If many fail, there is a program-level problem. It may be an incorrect exam that does not measure what the program aims to produce (deficient measurement), or it could be poor preparation of students (deficient education). In an assessment feedback loop, either the measure would be changed, or faculty would look to see where they are not covering, or emphasizing, or integrating, the desired knowledge, skills, or competencies.

II. Library and Information Science Education Assessment

For schools of library and information science (LIS), in the United States, Canada, and Puerto Rico, accredited to offer masters degrees by the American Library Association (ALA), the assessment component is expressed in the Standards for Accreditation as follows:

> I. Mission: (subsection 3)
> Within the context of these Standards each program is judged on the degree to which it attains its objectives. In accord with the mission of the school, clearly defined, publicly stated, and regularly reviewed program goals and objectives form the essential frame of

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> reference for meaningful external and internal evaluation. The evaluation of program goals and objectives involves those served: students, faculty, employers, alumni, and other constituents.
>
> II. Curriculum: (subsection 7)
>
> The curriculum is continually reviewed and receptive to innovation; its evaluation is used for ongoing appraisal, to make improvements, and to plan for the future. Evaluation of the curriculum includes assessment of students' achievements and their subsequent accomplishments.
>
> VI: Students: (subsection 6)
>
> The school applies the results of evaluation of student achievement to program development. Procedures are established for systematic evaluation of the degree to which a program's academic and administrative policies and activities regarding students are accomplishing its objectives.
>
> (American Library Association, 2008)

Within ALA's framework of master program content (e.g., organization of information, research competence, user education) each program determines its own mission and student learning goals, decides how to measure attainment, and documents what it does with the results. Outcomes for students in a particular program will combine the essence of librarianship with the mission of that particular institution. Measurement needs to be valid, reliable, and feasible. That is, the methods of measuring need to be true to the desired outcomes, provide consistent information, and not overburden those who participate.

Program-level assessment of student learning means aggregating data from direct and indirect measures of student learning. In the early 2000s, LIS programs primarily employed indirect measures as a measure of program assessment (Applegate, 2006). Indirect measures included such things as exit surveys or interviews, placement rates, student evaluations of teaching, and cumulative GPAs (see Palomba & Banta, 1999).

Measures are "direct" when they provide specific, detailed, and valid measurements of student knowledge and skills. These methods such as tests, projects, and observed demonstrations are very common within courses as the means to assess individuals (Suskie, 2009). Other direct measures can be added at the program level, such as national standardized exams, local comprehensive exams, capstone projects, or summative presentations.

A. Portfolio Assessment

A portfolio consists of an individual's collection of artifacts—projects, papers, observer evaluations, personal reflections, etc. While some portfolio designs include student reflections on their learning (which are indirect measures as far as examining actual skills or knowledge) the idea of a portfolio is

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fundamentally oriented toward *direct* measurement. In addition, a portfolio lifts individual papers, projects, and internship supervisor observations out of the context of individual courses. Each student's portfolio can not only include materials generated for courses but also for extracurricular activities, internship placements, or other program requirements such as comprehensive exams. The sum of all these items can represent the program as a whole in a way that the contents and measurement of an individual course cannot.

In addition, creating a portfolio as such—particularly one oriented around *program goals* rather than a checklist of courses—is a process that itself shows each student how to see the program as a whole instead of as an accumulation of graded credit hours. This is a powerful consideration in library science programs. Most programs provide great flexibility to students, due to the diversity of student backgrounds and the many career paths available in the field, but yet the aim is to have "coherent [emphasis added] programs of study" as stated in ALA's standards (IV.4).

Portfolios have been widely adopted for a variety of purposes by educators over the past twenty or so years. There are three main ways to use portfolios, although these are not mutually exclusive categories and each has important subcategories. The main ways are for development, assessment, and showcasing.

1. Development Portfolios

The developmental or learning type of portfolio is one of the most widely used, or at least researched and reported on, types. In a developmental portfolio, for each outcome, students preserve and reflect upon beginning, intermediate, and mastery-level assignments or accomplishments. This process of reflection is consistent with a "constructivist" theory of learning in which this intense form of participation reinforces and deepens student learning. These types of portfolios can be built into individual courses or designed to follow a set of skills, such as writing portfolios (see, e.g., Chitpin & Simon, 2009; Scott, 2005; Shepherd & Hannafin, 2009). While engaging in this developmental reflection has educational benefits, it is also time-consuming on the part of advisors or instructors, and because of that workload, is commonly associated with credit-bearing courses or requirements.

2. Assessment Portfolios

Assessment of individuals and their professional competency based upon how they present themselves and their work in portfolios has a long history. Higher education professors are expected to document their teaching,

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research, and service activities in dossiers or portfolios (Billings & Kowalski, 2008). This is a balance between areas of competency expected of all tenure-track faculty, on the one hand, and a tremendous variety in how that competency can be manifested in different academic disciplines, on the other hand.

Outside of academia, some established uses are in creative fields such as art and architecture. More recently, it has been massively adopted particularly in education both by schools of education and by state teacher licensing agencies. It is also being used or explored as an alternative in a wide variety of other areas: advanced practice nursing (Byrne, Schroeter, Carter, & Mower, 2009; Taylor, Stewart, & Bidewell, 2009), credit for prior learning (Klein-Collins & Hain, 2009), and music education (Kramer, 2007).

3. Showcase Portfolios

Showcase portfolios allow individuals to present themselves to potential employers using current and job-related media. For people in creative or technology fields, the line between a portfolio that shows proficiency to meet graduation standards and one that displays their competence to employers is essentially erased (Tubaishat, Lansari, & Al-Rawi, 2009).

Using a portfolio in LIS programs is not new, but it has primarily been concerned with assessing students individually with developmental portfolios in specific courses, or graduation-requirement portfolios. At many US institutions, it has only applied to students preparing for licensure as school librarians. It has also only recently been developed in an electronic format as opposed to the giant three-ring binder format. Thus, using an electronic portfolio (*ePortfolio*) structure for *program*-level assessment is a relatively new concept. There are at present only a scattering of reports on the use of this data for program, not student, assessment (Fitch, Reed, Peet, & Tolman, 2008; Gorlewski, 2010; Mercer, 2008;). This study reports on the design of such a system at one ALA-accredited Masters of Library Science program—at Indiana University (IU).

III. Development of an ePortfolio

IU's ePortfolio project was developed as a pilot study at the Indianapolis campus of the School of Library and Information Science (SLIS). IU-SLIS is a school located on two campuses, Bloomington and Indianapolis, with a shared accreditation by the ALA. The school's dean resides on the Bloomington campus, and there are two associate deans, one on each campus. The Bloomington campus offers the Master of Library Science (MLS), Master

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of Information Science (MIS), Specialist, and Ph.D. degrees; Indianapolis offers the MLS. Admission requirements, curriculum, mission, goals, and objectives are same on both campuses.

The Indianapolis campus schedules course times to fit students who work (evenings, Fridays), and offers web-based courses and courses delivered to several sites around the state by teleconferencing. Its student body is on average older, working, and reliant upon technology for coursework and administrative tasks. IU uses Oncourse, a self-developed course management system with robust storage, data, communication, and custom-design features. The University's information technology (IT) personnel developed an ePortfolio system and provide grants and staff assistance to faculty who use various Oncourse features to improve student learning.

The program goals for the IU-SLIS Master of Library Science are to:

- Assist and educate users of libraries and information centers;
- Develop and manage library collections;
- Organize and represent information resources;
- Apply management and leadership skills;
- Conduct and analyze research;
- Demonstrate basic technical expertise; and
- Approach professional issues with understanding.

The SLIS faculty had determined that there was a need to improve the method used to assess student learning outcomes to meet accreditation requirements which had been revised since the previous accreditation visit. Members of the faculty on the Indianapolis campus developed an ePortfolio for program assessment and improvement for a number of reasons. The benefits of the system are technology integration, program reflection, and the lack of an acceptable alternative.

One decision factor was to compare a portfolio system to other direct measure alternatives. If a capstone were to be introduced, it would lengthen the current 36 credit requirement or displace required courses or electives. If thesis requirements were instituted, it would again lengthen the program for students and also add significantly to faculty workload. Similarly, comprehensive exams would not lengthen the program for students, but would require careful design, impose significant workload on faculty, and require additional labor to aggregate results (as would theses).

A. Benefits

Technology was a prime benefit for process, learning, and administration. Some studies of the implementation of ePortfolios, particularly in teacher education program, reported that many students needed multiple workshops

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and extensive individual coaching to manage the technological platform (Hyndman, Gray, Pierce, & Hyndman, 2007). This turns into a distinct advantage for LIS program evaluation. Librarianship is an inherently technology-connected profession. It is not only desirable but also essential that graduating students have skills sufficient to master (at least) an ePortfolio system. In that sense, the ability to construct a portfolio itself is a base-line measure of one professional competency.

There were also important administrative benefits. Both faculty and students in this situation (as in many library schools) are often widely scattered geographically. This securely authenticated but web-mounted platform allows for access, administration, and communication from anywhere. While the IU system includes a series of tools for scoring, commenting on, and aggregating evaluative information, any ePortfolio system that includes private, public, and shared areas for storage of artifacts (a cloud configuration) can serve the basic needs of portfolio use.

Finally, this specific system, because it was primarily designed for undergraduate, developmental use, includes a reflection component into its design. Besides the simple storage of specific artifacts, having students provide (brief) reflections added to the evaluators' understanding of those artifacts. More, it turned out to provide beneficial encouragement for students, as they graduated, to have a better understanding of what their degrees—their accumulation of credits, requirements, and electives—added up to.

B. Pilot Study

As the faculty began to explore this option, they received a competitive grant from the Center for Teaching and Learning on the Indianapolis campus to assist in the design phase. A pilot study was undertaken to test the concept and perfect its design in five phases.

- Summer 2009: Students tested basic navigation and understanding of the process;
- Fall 2009: Beginning and graduating students tested navigation and usage with small-scale implementation;
- Spring 2010: Graduating students tested construction of complete portfolios;
- Summer 2010: Faculty members tested navigation, usage, and evaluation of artifacts submitted by the graduating students;
- Fall 2010: Faculty members discussed the outcomes of the pilot and use of the assessment results.

1. Student Testing

Given the experience reported in the literature on portfolios—that students were often challenged by both technology and the conceptual framework of

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portfolios—a careful and thorough approach was taken to get information from students at various stages of their programs. During the first phases in summer 2009, some design features (or flaws) were noted and reported to the University's IT personnel who made some changes. Not all suggestions were adopted if the needs of one particular user group did not outweigh the priorities of the majority of users, which in the IU system as a whole would be undergraduates.

Phase one. In summer 2009, an ePortfolio site for the MLS was designed. Student users of the site were presented with a matrix listing each of the desired learning outcomes in a column on the left, with corresponding space (cell) in a column on the right in which to load artifacts. Students selected items from any part of their coursework that they felt demonstrated mastery of that outcome. During the pilot, different prompts were tested to see what would be most helpful to users, but would also decrease administrative burdens, with fewer questions and less staff or faculty time.

An option existed within the IU ePortfolio for administrators and faculty to designate particular assignments for automatic submission from all students. This was a feature used in undergraduate implementation, and undoubtedly simplified their portfolio construction. In the MLS ePortfolio, students themselves chose any assignments, from any course. This had several benefits. Students were more personally conscious of the link between assignment and program goal. They had great flexibility in the choice of project from a required class or a more advanced elective. For example, people intending to be public services librarians would have more basic items for the "organization and representation of knowledge" (cataloging) component than for "assist and educate users." In addition, the program's two objectives relating to technology and professional issues were not tied to a specific course in the program. Instead, these could be, and should be, evident in a variety of courses, and students could reflect on their meaning within the context of areas of professional practice.

Participants in the summer of 2009 were students taking a course on evaluation of library sources and services. They represented a variety of interests (public, school, academic) and backgrounds (from paraprofessionals to new college graduates to career changers), because the course is one of two options for a program requirement. They were asked to navigate around the interface, read and reflect on the prompts, consider what items they might select, and give their perspectives on the use of portfolios in program evaluation. At this point, students provided feedback on navigability issues and the kinds of information and instruction that were needed. Site design information was passed on to the University's IT personnel for

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implementation. Suggestions about instructions were incorporated by SLIS staff into an improved matrix for further testing.

Phase two. In the fall of 2009, there were three groups of participants: students taking an evaluation course, paid volunteers who were beginning the program, and paid volunteers who were close to graduation. The beginners were specifically included based on comments from the summer such as, "I know what this means but I would find it confusing at the beginning." In full implementation, students would ideally be working with their matrix throughout the program, filling in each area as they felt they achieved their best work in it.

IU's Institutional Review Board approved the study design. Volunteers were given a modest stipend to compensate them for their time. For students in the evaluation course, an assignment to critique instructional evaluation was required, but it could be fulfilled either by reviewing the SLIS ePortfolio or in one of two other ways. Most students chose the ePortfolio-review option.

Beginning (first semester) and end (last semester) of program was one demographic division. Another grouping was the type of library the participants were interested in. Participants from the evaluation course included three students with academic library career goals, ten aimed at public libraries, and seven at school libraries. The recruited volunteers consisted of 13 academic library, 3 public library, and 3 school library. Participants navigated around the portfolio and also completed at least one matrix area. They either provided written comments or were interviewed by project staff with comments transcribed by project staff. Contrary to expectations, the students at the beginning of their program did not experience significant difficulties.

At this point the design of the matrix had been thoroughly tested with students. It seemed clear that the mechanics were user friendly. More broadly, the interviews raised other important issues. Students wanted to know what kind of feedback they would get from faculty or advisors. This helped the project staff design orientation materials for the portfolio. Students also wanted to know if they could use the materials with potential employers, as "showcase portfolios." This request was repeatedly stressed to the University's IT personnel, and it helped them prioritize development of a "presentation maker" template that students could use before and after graduation.

Simultaneously with the student-side testing, faculty had been discussing the use of portfolios in general. Some faculty raised concerns about the conceptual task of populating a matrix with the entire array of

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documentation of mastery. Would students not take it seriously enough—would they upload items casually, hastily, even randomly? Would students take it too seriously—would they request extensive advising from faculty? Would they want detailed feedback?

Phase three. The spring 2010 student phase was designed to address these issues. Twenty paid volunteers were asked to populate the entire matrix, to keep track of how long it took, to ask questions of project staff as if to their advisors, and then to be interviewed about the process as a whole. This was still somewhat artificial, because if it were in full operation, most students would not be working with the matrix only in their final semester, but would fill it as they went along.

The findings of this final step were reassuring. Students reported that selection of artifacts was easy for most areas. They had the most difficulty determining what to submit for the stated outcomes when there was no specific core course that matched the area (i.e., technology and professional issues). Public library students reported the most overall difficulty determining items to submit. When asked about the usefulness of the ePortfolio, 65% reported that they saw value in measuring program outcomes, 60% felt it would be useful for job searches, and 35%, unsolicited, commented that it could be a tool used for evaluating teaching. Although it was stated that the function of the ePortfolio was for programmatic review, not individual student assessment, several students wanted feedback from the faculty on their ePortfolios. Students reported that it took them more than three hours to complete the ePortfolio—again, this was from start to finish, on an artificial schedule.

Overall, the three semesters of student testing resulted in:

- An interface that students found easy to navigate;
- An external/showcase option;
- Student appreciation for the ePortfolio as a measurement tool; and
- Instructions and assistance for students that was and would be manageable by staff or advisor faculty.

The student phase also resulted in a structure that was filled with items demonstrating mastery of 7 goals by 20 students. This constituted a small but viable aggregation of information that could be used for testing the next and essential part, namely faculty review of the artifacts for program assessment and improvement and conceptual and mechanical testing. That is, could faculty access the items easily? Did reviewing them provide information that made sense?

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2. Faculty Testing

The task for faculty was to review student work, to determine the extent to which it demonstrated mastery of program outcomes, and to extract information that could be used for program improvement. The degree of mastery issue was framed as a mainly quantitative measure, while the process of program improvement benefited from a qualitative approach. Both were possible within this as well as other ePortfolio systems. For the quantitative measure, a reasonably consistent scoring system was needed. The other needed a way to note and aggregate observations about student work.

The first step was to access the artifacts chosen and uploaded by students. Oncourse, the IU learning management system, had reporting features that provided easy access to the submissions by learning objective and by student. Any authorized faculty user could click on a program goal, choose a report type, and be presented with a screen showing links (storage of) all of the submitted items for that objective, organized by student. By-student organization was especially important in cases where a student had selected multiple items to demonstrate achievement of the goal when no individual item would provide sufficient evidence.

In general, there are two complementary concerns in program-level evaluation systems—having enough, and validly representative material, and not having too much material for available faculty time. There are some better and worse answers to this dilemma. In some fields, such as nursing (NCLEX exam) and business (e.g., the ETS Major Field Exam) there are standardized tests that all students can be required to take. There is no grading time needed for faculty, and the data is reasonably detailed enough to be applied to program improvement, although the main drawback of standardization is the lack of local considerations. Another approach is to develop a collection of "best" papers. This is both easy and valuable for other purposes, but it ignores the range of students and student work.

Within IU's ePortfolio system *all* students populated their matrices of goals with artifacts. All students could use these artifacts to create "presentation" portfolios if desired, and any of them can request feedback from advisors. Not all items needed to be evaluated by faculty for program review, however. Instead, random samples could be identified that reasonably represented the whole, avoiding participation and selection biases.

Phase four. In the summer of 2010, each of the principal investigators in this study first looked at a selected set of submissions for one of the objectives to get an overview of the possibilities for review of the data. Qualitative notes were taken for each student, and then the investigators met to compare notes.

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Technologically, preparing reports and downloading data was quick and easy. Both investigators found it relatively simple to determine whether a student met the stated objective or not, and they discovered that they had independently designed a rubric to assist with that evaluation. After comparing notes, a generic rubric format was designed as seen in Table 1.

The Oncourse matrix framework allowed for both numeric coding and text fields. The numbered scores for achievement allowed the School to generate brief broad summaries, and these also identified and screened for individual items which were scored particularly low or high, to ensure reliable ratings. Looking at overall averages, faculty reviewers then focused on identifying what areas had the best or weakest performance, and reviewed notes for those areas.

This was tested by using the rubric with additional qualitative note taking for a selected set of artifacts from two of the other learning objectives. Each student's cell took from 15 to 30 minutes to assess, based on the number of artifacts that had been submitted. For some program goals, many students selected the same course assignment to populate their cells, such as a final collection development plan assignment to demonstrate knowledge of the "Develop and manage library collections" objective. For others, there was a mix of basic and advanced course assignments (e.g., MARC records vs. digital library development plans). Students submitted one to five artifacts for each objective.

This pilot review showed a gap in the documentation. Each student had one overall program reflection. Sometimes this provided good information about how the student viewed their artifacts, but accessing it in conjunction

Table 1
Artifact Scoring Rubric

Student	Unsatisfactory (1)	Marginal (2)	Satisfactory (3)	Excellent (4)
A	Omitted part(s) of the goal	Included all parts but with poor quality	Included all parts at the level of basic coursework	Showed exceptional creativity and/or advanced knowledge
B				
C				
D				

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with looking at the artifacts was awkward. In other cases students provided little detail, focusing on a very broad-level discussion of librarianship. Therefore, it was decided that it was necessary, when populating the objectives cells, for students to use a small comment field to provide a very brief description of why those artifacts were good—and complete—demonstrations of content mastery.

Phase five. At the beginning of fall 2010, Indianapolis faculty had their regular faculty retreat. Observations on student achievement based on the small pool of volunteers were shared among the full time faculty. Even this very limited amount of student learning data proved to be very interesting to the faculty, and provoked spirited discussion of what they could do in their courses, both basic and advanced, to reinforce program learning outcomes. This was the ultimate and very successful goal of program assessment, namely invigorated teaching, providing effective learning, and ensuring a continuous improvement environment.

C. Study Results

The pilot study explored the entire process of using ePortfolios for program assessment on a small scale. The pilot study explored the entire process of using ePortfolios for program assessment on a small scale, approximately 10% of full size. The final pilot data from 20 students was reviewed by 2 faculty members. This would compare to an actual annual review of data from approximately 200 graduating students by 20 faculty members when fully implemented. The pilot tested the entire process from start (student usability) to end (faculty use) to improve teaching and learning.

Interviews and data showed that the students had relative ease navigating the ePortfolio and determining what artifacts to submit for each stated learning outcome; however, the length of time taken to complete the process was longer than anticipated. The testers came into the study without previous knowledge of the ePortfolio, so in the future, this will likely be reduced by introducing all students to the tool during their orientation and by having faculty suggest certain assignments to students throughout their program that could be used to populate the ePortfolio.

Faculty analysis of the results was also found to be relatively easy. For the most part, artifacts submitted made it clear whether the student had mastered the content of the objective. A few questions did arise during the analysis. For example, students clearly presented information to demonstrate knowledge of the "Assist" component of "Assist and educate users of libraries and information centers"; however, the "Educate" component was

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weakly represented in the artifacts. Was this due to the students' use of "or" instead of "and" in reading the prompt? Or, could it be that artifacts were not a good measure for "Educate," because this might have best been shown in a live setting? For example, could observation notes be used as documentation? Or, was it not a measurement issue at all but an area where the program had a weakness. This was the sort of issue that could be examined in more detail with full implementation of the ePortfolio system.

IV. Conclusion

From this experience and the small pool of results, it appears that ePortfolio analysis provides a robust administrative framework and rich data for overall review of programs. It can identify problem areas, and faculty can look for causes which could include lack of coverage of the area in required courses, infrequent offering of an elective course in the area, or simply a flaw in the tool. If there were a problem with the tool, it should be adjusted. The real goal is to find and address weaknesses in the program itself.

Even in this initial stage, an example of use of the ePortfolio process, that is, identifying and addressing a problem area, occurred with respect to the program's technology outcome. One student near the end of his program submitted a simple PowerPoint presentation as the artifact to demonstrate knowledge in the "Demonstrate basic technical expertise" objective, and he stated in the reflection section that he consciously arranged his program to avoid technology-related courses. The fact that this emerged in the ePortfolio is a powerful demonstration of the importance of gathering information from all students, rather than (as is often the case), gathering only exemplary materials from outstanding students. At a faculty meeting, a consensus quickly emerged to integrate technology applications into more of the core/required classes, not leaving it to courses with technology "labels."

Informative data from representative students about program goals which is then used for improving the teaching and learning process is the purpose of any assessment process, and ePortfolios proved to be an effective, efficient tool for this essential academic purpose.

Each educational program designs its own outcomes and needs to tailor its mechanisms for assessment to the characteristics of its student body and its faculty structure. ePortfolios work well for students in distance/online programs with a relatively high degree of technological familiarity.

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