The Development of an ePortfolio as a Capstone in a Holistic Health Minor

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Use of electronic portfolios (ePortfolios) has been advocated to highlight student accomplishments as well as to document program and course outcomes. This use of ePortfolios incorporates information technology, thus aligning the educational process in degree programs to twenty-first-century teaching, learning, and information literacy. Here we describe a project to explore the feasibility of using the ePortfolio as a capstone for a Holistic Health Minor (HHM) in an undergraduate program. To make this transition in an efficient manner in the HHM, we developed a plan of implementation, with training for faculty and students. A team of faculty developed a professional ePortfolio template and implemented a pilot program for nine graduating students enrolled in the HHM. The team assessed college resources, assisted with developing the technological competence of both students and faculty, and created a rubric for final capstone assessment. Our experiences lead us to recommend that an interdisciplinary team is crucial for the success of the program. Our experiences also demonstrate that the use of ePortfolios can enhance assessment of student and program outcomes.

Technology has allowed the scholastic achievements of students to grow in unforeseen ways. Technology has supported multiple communication styles within schools, allowing students to create presentations beyond the simple posters and camcorder presentations that were once common. One invention that has the ability to change how students are critiqued is the ePortfolio. ePortfolios are being "considered important by those in education and employment, including policymakers" (Moores & Parks, 2010).

ePortfolios have multiple potential positive outcomes, including "the support of individuals through a critical reflective approach to competency development, supporting professional collaboration, and providing a structure for planning career progression" (Andre, 2010). In general, students feel that ePortfolios enhance their education by assisting them in integrating academic and experiential learning (Hayward et al., 2008). An ePortfolio encourages application and integration of knowledge, helps students recognize performance gaps, fosters student development, and promotes a student's responsibility for learning (Bierer, Dannefer, Taylor, Hall, & Hull, 2008).

ePortfolios and Student Learning

Reflective ePortfolios can assist students in organizing and integrating academic and experiential learning and can illuminate developmental transitions (Hayward et al., 2008; Lewis & Baker, 2007). At the end of the school term, the level of academic achievement and retention in an ePortfolio group was significantly higher than those in a control group (Guzeller, 2012). Recent studies have varied in their attempts to use the ePortfolio with college students.

Health-related pre-professional and professional curricula have begun to explore the utility of ePortfolios as a mechanism for reflection and feedback in clinical decision making. Wassef, Riza, Maciag, Worden, and Delany (2012) used the "Plan, Do, Study, Act" model for quality improvement in order to develop a professional ePortfolio template that allows students to assess their nursing program in multiple ways. Another study attempted a different approach by using a four-stage ePortfolio for a Doctorate of Physical Therapy program. The researchers began by creating a paper outline of their ePortfolio template, followed by an electronic format. With subsequent pilot testing, an ePortfolio tutorial was developed (Hayward et al., 2008).

Feedback is a highly complex, multi-dimensional phenomenon, and healthcare learners consider it essential for their learning, recognizing that without it patient safety may be compromised (Peacock, Murray, & Scott, 2011b). Drawing upon three examples where ePortfolios have been embedded into the curriculum, Peacock et al. (2011b) found that most participants were generally positive about using the ePortfolio to access, review, and store feedback on their assessments. In some cases where the ePortfolio had been introduced across a healthcare program, a number of learners had also begun to use feedback provided through the ePortfolio as a springboard for reflection and planning for future development. These researchers used novel work based on threshold concept, and proposed the Personal, Learning, and Thinking Skills framework as a guide to support deeper learner engagement (Peacock et al., 2011b). Emerging literature includes health-related degrees with pre-professional programs (Moores & Parks, 2010; Vernazza, et al., 2011), and results are encouraging. Thus, the authors chose to integrate the

use of ePortfolios in an undergraduate minor program in order to assess student learning outcomes. The use of ePortfolios in a health-related minor program has not been studied in the literature. Therefore, the ePortfolio was our team's primary goal as part of our internal assessment and as a contribution to our accreditation process and to the dialogue on the use of ePortfolio in academic institutions.

Development of an ePortfolio in the Holistic Health Minor

The interconnectedness of teaching, learning, and assessment is a challenge for minor programs in higher education as the emphasis on closing the loop becomes the responsibility of the faculty. Throughout the assessment process, it is important that student learning outcomes remain the focus and not be lost in an endless collection of data. It is vital to understand that assessment data derived in a manner appropriately linked to the program outcomes be available to those who develop and implement strategies to improve teaching and learning. The integration of a tool that simultaneously evaluates student learning and provides measures for assessment purposes is an effective approach for attaining both goals. Strategies to meet the assessment needs of the program must be implemented in a manner that does not disrupt the teaching-learning process. The development of an ePortfolio as a capstone for the Holistic Health Minor (HHM) for undergraduate students is one method for evaluating student learning outcomes of a program and enhance student learning. The HHM assessment process identified the need to verify that students graduating in this minor had successfully met the learning outcomes of the program. The assessment team developed an ePortfolio grading rubric that was piloted by interdisciplinary HHM faculty for evaluating student learning outcomes. The catalyst for the self-study and the development of an ePortfolio as a pedagogical approach was the college's forthcoming regional accreditation and the desire to demonstrate that the minor program met the strategic outcomes of the college. By applying knowledge gained through assessment to improve student learning, progress towards institutional effectiveness can occur.

Initial Steps

Measuring program effectiveness is an ongoing process and should be thought of as a systematic plan. Initially, a small team of faculty formulated program goals and student learning outcomes in order to achieve a holistic approach to health and well-being. Faculty developed an appropriate assessment instrument, which is a critical step in confirming whether students know

the important concepts needed to acquire the holistic health minor. When the team began its work, with the exception of successful completion of five courses within the HHM, no formal assessment for students was established. The program therefore had no way to verify competency in the overarching goals of the minor. Since course offerings were multidisciplinary in nature and variable in content and experiential learning, the newly formed assessment team realized the need to determine the acquisition of programmatic goals by student graduates. Curriculum mapping revealed a wide range of inconsistencies in the course learning outcomes, which further confirmed the need to ensure that all graduates of the HHM meet the desired program and student learning outcomes.

Capstone Development

The HHM Assessment Committee worked diligently to develop an infrastructure to support and strengthen the minor's internal assessment plan through the development of an ePortfolio as a capstone project. To ensure that program outcomes guided the capstone development, implementation, and assessment, the faculty reviewed the literature and met with an expert in ePortfolio development and implementation. In general, the HHM capstone ePortfolio encouraged critical thinking and deeper learning and showcased abilities and achievements.

As part of the assessment plan for the HHM, the capstone project was developed through the use of an ePortfolio using the software Adobe Acrobat Pro X to monitor students' progress through HHM courses and to create mutually reinforcing intellectual and co-curricular experiences among diverse students and faculty. The Adobe Acrobat Pro X was selected for its current availability for all students through the use of the college's computer labs. The use of this software program prevented students from incurring any additional costs. Specific student outcomes, guidelines, and requirements were formulated by linking theory to practice, with the use of technology as a medium. The completion of an ePortfolio is now a requirement for all graduating HHM students.

Initially, the learning outcomes and guidelines were reviewed by the HHM faculty before implementation and distribution to the students. In addition, a student teaching assistant reviewed the modified software instructions to provide feedback on focus and clarity before posting them on the HHM Blackboard site. A copy of the rubric was provided for students to review. They were provided with a variety of methods to support the development of their ePortfolio capstone. Two ePortfolio workshops were conducted for students requiring assistance in developing or completing their ePortfolio prior to

graduation. In addition, some students with scheduling conflicts were provided one-to one-mentoring in the computer lab with HHM assessment faculty present at pre-scheduled times. The Discussion Area on Blackboard 8 was used as a site for questions and answers and the eventual posting of the completed ePortfolios by the nine graduating students of the program. The site was also made available to approximately forty non-graduating students to view samples and to begin their capstone projects.

Implementation

During the students' academic career at the college, they are advised by the HHM Coordinator to develop an ePortfolio consisting of documents that reflect their journey through holistic health coursework and related experiences. Information to assist the students in this project is provided in the HHM ePortfolio Guidelines. The students may be creative in the presentation of their work but must relate the course content to the program outcomes. Students generally begin with a self-introduction page that includes their holistic health philosophy statement. Many students begin by listing the program outcomes and align their course syllabi accordingly. Samples of papers, exams, and projects supporting program outcomes are included. Any evidence of college or community service is also incorporated, along with letters, certificates, and photos. Some students write a series of short stories or poems, or a memoir, supplementing their writings with short analytical paragraphs reflecting what they have learned and what they will take with them. It is suggested that the students provide the link to the HHM Website within the capstone. The ePortfolio provided evidence about the cumulative effect of student learning outcomes during the HHM program.

Evaluation of the ePortfolio

The purpose of the ePortfolio was to ask students to engage in metacognition by reflecting on what and how they learned in the HHM. The ePortfolio provided an opportunity to coalesce student learning from a holistic perspective. The assessment rubric was useful in this context because of its cost-effectiveness, reasonable accuracy, and carefully planned systematic assessment process linking student learning to program and institutional goals. Students were evaluated on their level of performance related to the following program outcomes:

1. Students will successfully apply elements of holistic health theory and knowledge through recognition of interactions between theory and practice.

2. Students will explore the concept of holism by examining the relationship between quality of life, health, illness, and recovery.
3. Students will analyze the impact of health promotional campaigns and reflect upon the impact they have on their own health decisions.
4. Students will be able to locate, retrieve, and critically evaluate a variety of information sources related to holistic health.

A rubric was designed specifically for evaluating, in measurable and comparable terms, the students' submission of the final capstone ePortfolio project. Members of the HHM assessment committee evaluated the ePortfolios, and all faculty were given the opportunity to participate in the evaluative process. The HHM faculty believes that the scholarly activity students experience in the minor promotes liberal arts ideals, such as developing as lifelong learners. Students who develop knowledge in this area demonstrate their understanding by completion of a high-quality capstone project. The HHM ePortfolio Evaluation Rubric includes four levels of performance: novice, basic, competent, and proficient. Each level is assigned a value of 1 to 4. Criteria included content relevancy, reflection, presentation, and program outcomes (Table 1). Content descriptions related to the levels of performance were kept clear and concise. To attain a proficient level (i.e., a score of 16), students had to provide creative samples of their coursework, related personal and field experiences, a philosophical statement of holistic health, a link to the website, and interpretative graphics. The maximum score a student could achieve was 16, and the minimum score was 4 (see Appendix). A score of 11 was required to receive a satisfactory outcome and complete HHM program requirements.

Results

The pilot program included nine HHM graduating students who completed a capstone ePortfolio. Two assessment committee faculty members evaluated the capstones using the HHM ePortfolio Evaluation Rubric. The rubric indicated whether a student's work was rated as novice, basic, competent, or proficient. The ePortfolio is a pass/fail assignment, so a numerical scale without a clear neutral midpoint was used to force a non-neutral response (Middle States Commission on Higher Education, 2007). The rubric consisted of a simple rating scale, with a maximum score of 16 and a minimum score of 4. The mean score was 14.25, and the median score was 15. The findings of grading consistency are supported by a Cronbach's Alpha of .82, which reflects an adequate internal reliability

Table 1
ePortfolio Rubric Results of the HHM Capstone

| | Range | | |
Level of Performance	Potential	Actual	M
Content Relevancy for Holistic Health	1-4	2-4	3.68
Reflection of the Holistic Health Journey	1-4	3-4	3.81
Presentation Shares the Experience	1-4	1-4	3.56
Program Outcomes of the HHM Minor	1-4	1-4	3.25

consistency. All HHM faculty were encouraged to review the ePortfolios for comment and suggestions.

In relation to HHM's Program Outcomes, students achieved a mean score of 3.25. A maximum score of 3, indicating proficiency, was assigned by the reviewer when program outcomes were linked to courses and the students' personal experience and when they provided a link to the HHM website. A score of 3, reflecting competency, was assigned when student program outcomes were linked to course and student experiences, but a greater depth reflecting a relationship to their holistic health journey was missing. A basic score of 2 was assigned when not all program outcomes were mentioned and their relation to the students' experience was not clearly defined. A novice score of 1 was assigned when students provided a link to the HHM website, but no evidence of self-reflection related to the program outcomes was present. Scores on the HHM rubric consistently revealed high levels of quality (or achievement), as evidenced by scores on the rubric designed to assess the program's overall efforts.

In relation to the students' performance level for *content relevancy for holistic health*, the mean score was 3.68. A proficient score of 4 indicated that the ePortfolio provided excellent samples of coursework related to personal experience and that samples of various course assignments and community engagement were present. A competent level score of 4 was achieved by students who provided examples of course work related to personal and field experiences. A basic score of 2 was assigned when students presented a limited number of examples of their work and out of school activities. Students using only personal information not clearly related to holistic health were given a score of 1.

Reflection on the holistic health journey is a very important area of the student's learning experience. It is imperative that students articulate their personal Philosophy of Holistic Health. Captions linking theory to practice with reflective thinking assisted the student with integration of knowledge to real life experiences. The mean score was 3.81. Students capable of presenting this information earned a proficiency score of 4. A competent student, who used good captions to link theory to practice but had a superficial reflection, received a score of 3. A basic score of 2 occurred when captions were present and linked practice and theory but reflection was purely descriptive. A novice score of 1 was assigned when the student did not link theory to practice and failed to provide adequate evidence of reflective thinking.

The performance level on the rubric for *presentation/shares the experience* provides students with the challenge of communicating effectively their lived experience to others who view their ePortfolio. The students' mean score was 3.56 for this category. A proficient score of 4 indicated excellent use of graphics and technology to enhance the presentation of the ePortfolio as a capstone project. Uploading and transferring interpretative graphics is a necessary skill for designing an ePortfolio worthy of submitting as a capstone project. Students achieved a competent score of 3 if they demonstrated good use of graphics and technology that enhanced the HHM ePortfolio as a capstone project. A basic student score of 2 indicated minimal use of creative graphics or technology. When little or no graphic skills were utilized other than those offered through the basic Adobe Acrobat Professional X, the student's score was considered to be at the novice level and was assigned a numerical score of 1.

The final section on *program outcomes of the HHM* provided the students' perception of how each of the five courses met program goals. Students' mean score was 3.25. A proficient score of 4 demonstrated that program outcomes were linked to courses and students' personal experience and that the HHM website link was included. A score of 3 indicated that program outcomes had been met but that greater depth was needed in order to reflect a relationship to students' holistic health journey. If few program outcomes were mentioned and the relation was not clearly defined, students received a basic score of 2. Finally, students received a novice score of 1 if there was no mention of outcomes.

Graduating students were asked to provide feedback regarding the use of the ePortfolio as a capstone for the HHM program. Anecdotal evidence of perceived benefits included a feeling of

accomplishment and a sense of the amount of work necessary to develop a personal holistic health philosophy. In other words, based on their coursework in the HHM students witnessed the evolution of their own concept of holistic health. Barriers included the fact that some students did not save all their projects, as they did not have previous knowledge of the capstone requirement. Recommendations for future student engagement in the capstone included providing adequate time and preparation for the ePortfolio.

Limitations

Limitations of an assessment for a newly developed capstone using ePortfolio are unique to the Holistic Health Minor. The design, implementation, and evaluation of the learning outcomes provided students and faculty with greater awareness of course experiences through meaningful learning. In this small cohort, high scores for the ePortfolio indicate as well that further work may be needed to ascertain which students are exemplary and which are performing at a minimum competency level. Although the authors were pleased with high scores, after an evaluation of the rubric and process, it was revealed that a one-to-one orientation and close mentoring had been available to all nine students completing their ePortfolio prior to graduation. In the future, this may be problematic due to the increasing enrollment of HHM students and subsequent need for larger group orientations and due to time constraints on the faculty. For example, comparing grade point average and other measures of advisement through the HHM may impact the outcome of higher scores. Further discrimination may be necessary in order to make distinctions in future student outcomes for the HHM ePortfolio.

The art of collecting and analyzing a personal journey inherently produces subjective outcomes and findings. Our developed rubric provided one way to explore the underlying student and program goals. While strong agreement was noted in faculty scoring, additional domains beyond program outcomes may be missed in the student learning process in the HHM. However, our sample size was small, thus preventing generalizing our results for broader contexts. The intention of developing a HHM ePortfolio was to assess student and program outcomes. The limited software options for the faculty were directly linked to budget constraints for the program and the students; developing an in-house platform or purchasing a commercial product was simply too expensive. Due to the software's limitations, the time needed to master the software by the students and the faculty was challenging. A skill inventory of technological competency and ePortfolios was not conducted, but may be beneficial to successfully implementing an ePortfolio as an assessment measure. Privacy, security, and access to the ePortfolio after the students graduate were also identified as concerns. Despite these concerns, the faculty found that implementing this additional requirement for the HHM, while time intensive, led to a collection of information confirming that programmatic outcomes have been met.

Discussion

The literature on the application of an ePortfolio, although representing its potential benefits and values, has its limitations. The time-consuming manner of implementing such a program, since it involves teaching both faculty and students how to maneuver properly through the software, can be challenging (Andre, 2010). Therefore, students must be taught early on in their program of study how to utilize the program so that there will be ample time allotted for practicing the use of the ePortfolio (Moores & Parks, 2010). Supportive, clear, and succinct guidelines are also necessary for optimal ePortfolio outcomes. Professors assessing ePortfolios should have clear guidelines and criteria regarding the structure and size of the students' ePortfolios (Moores & Parks, 2010). While our research did not provide extensive feedback beyond the numeric rating arrived at through the rubric, Peacock, Murray, and Scott (2011a) have conducted research on the role of feedback through the use of ePortfolios. They point out that as educators, we are still in the formative stages of implementation of ePortfolios and that further research is required to explore its future role, especially regarding feedback in the healthcare arena (Peacock et al., 2011a, 2011b).

Our ePortfolio implementation and assessment aligns with research findings in the literature. Therefore, a formal presentation of guidelines, accompanied by a link on the HHM website, proved to be an appropriate strategy. Orienting students and faculty early in the process fostered greater adherence to the goals of this capstone for graduating HHM students. Additionally, a major advantage of our HHM ePortfolio is the ability to share information with multiple faculty readers from different schools simultaneously, since the HHM minor is an interdisciplinary approach to learning throughout the college. The use of a developed rubric to assess HHM program outcomes is important in providing valuable feedback to all faculty teaching in the minor. The rubric also provides an explicit measure of program outcomes in student HHM learning. Our experience demonstrated that early planning, preparation, and training of students and faculty are necessary for successfully meeting the needs of the HHM program. Currently, the ePortfolio asks students to synthesize course content with their sense of personal well-being in a reflective manner.

This process may provide them with an expanded perspective on their community and world view as it relates to holistic health. Future graduate surveys, however, are necessary to determine the impact of the ePortfolio process and continued life-long learning beyond graduation. It is the intention of the HHM ePortfolio to incorporate program learning into students' future careers with the potential to be used as a catalyst for graduate school or employment opportunities. A recent survey found that 72% of companies have increased their use of social networks for job recruiting (Schuele & Madison, 2010). If employers are searching the Internet for information, then students who can provide a professionally created website can potentially increase their job opportunities. Since ePortfolio websites can be accessed anytime from almost any place, they are easy and convenient for both graduates and employers.

The development and implementation of an ePortfolio and grading rubric has provided a framework for assessment of student learning in the HHM. Lessons learned include the importance of student and faculty training, of setting clear expectations, and of fostering greater communication with students and faculty throughout the ePortfolio process. There is potential for an expanded role for ePortfolios throughout the program. For example, students may incorporate greater reflection earlier in the process for timely feedback from each course to enhance learner engagement. While the use of a rubric for assessment provides rich insight into program outcomes, future research is needed to ascertain the sustainability of the ePortfolio in postgraduate students.

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nutrition in the Holistic Health Minor at the Richard Stockton College of New Jersey. She currently is the Chair of the Assessment Committee for the Holistic Minor and has lead in the development of the ePortfolio as the capstone of the Minor. Joan has played an intricate role in linking the Holistic Health ePortfolio and its rubric to the assessment of the program's outcomes. Prior to coming to Stockton College, she had extensive experience with academic programs across the institution to support the assessment of learning. She received her diploma in nursing from the Hospital of the University of Pennsylvania, her BSN from Thomas Jefferson University, her MSN (Burn Emergency and Trauma) and PhD candidacy from Widener University. She also has enjoyed a 30-year clinical career working in acute care.

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Acknowledgements

Appendix
Holistic Health Capstone ePortfolio Rubric

Level of Performance	Novice 1	Basic 2	Competent 3	Proficient 4
Content Relevancy for Holistic Health	Used only personal information unrelated to holistic health	Few examples of coursework or community engagement activities were provided	Examples of coursework, related personal and field experiences provided	Excellent examples of coursework, related personal and field experiences were provided. (i.e., samples of course assignments and community engagement activities were present)
Reflection of the Holistic Health Journey	Captions did not link theory to practice and no evidence of reflective thinking was present	Captions were present and linked theory to practice but were descriptive only	Good use of captions to link theory to practice but reflection was superficial	Excellent captions that linked theory to practice and provided reflective thinking. (i.e., Philosophy of Holistic Health statement was present)
Presentation Shares the Experience	No graphics or technology were utilized	Minimal use of graphics or technology were utilized	Good use of graphics and technology that enhanced the HHM ePortfolio as a capstone project	Excellent use of graphics and technology that enhanced the presentation of the HHM ePortfolio as a capstone project. (i.e., uploaded interpretative graphics that linked the experience to holistic health)
Program Outcomes of the Holistic	No mention of the program outcomes	Few program outcomes were mentioned, relation was not clearly defined	Program outcomes were linked but a greater depth needed to reflect relationship to holistic health journey by student	Program Outcomes were linked to courses and student's personal experience. (i.e., Link to HHM Website present)
Sub-Scores				
				Total Score =