The following samples model various ways in which faculty have written successful award submissions. Entire submissions are available for your perusal at the Center for Teaching Excellence.

We encourage you to use these samples to stimulate your thinking, and then to discuss your specific ideas with Laurel Willingham-McLain at the Center for Teaching Excellence (cte@duq.edu). She oversees the award process, but does not vote. As such, she is available to consult on the award submission process.

The earlier you consider ways to integrate the assessment of student learning into your course planning, the better! Evidence of learning is essential to this award. Although this is a faculty award process, ultimately these practices focus on promoting our students’ learning.

Course & Context and Motivation for Innovation
Lynn Simko (Nursing)

Courses and Context in Which the Innovation was Introduced: The mock code simulation was introduced into courses in two distinct School of Nursing (SON) degree programs. In the traditional undergraduate nursing program it was introduced in the UPNS 313 Nursing Care of the Patient Experiencing Illness II; in the second degree BSN program it was introduced in UPNS 302 Human Response and Health Promotion in Acute Illness (See Appendix B for the course syllabus for Acute Illness). In both classes the students had a section of material which lasted for over half of the semester which focused on acute care of the adult patient in the intensive care unit (ICU) setting. Throughout the course the students learned how to interpret cardiac rhythm strips. At the completion of this material the students were then introduced into the treatment of lethal arrhythmias. The mock code was a culminating (summative) evaluation of all that was learned throughout the course.

Motivation for the Innovation: Lethal arrhythmias can result in a “Code” which is when a patient no longer has a pulse and needs immediate assistance (the patient can either stop breathing or his/her heart stops functioning). This is a huge high stake event in the medical field, which will determine whether a patient lives or dies. It is always better to experience your first “code” in a controlled setting, where the worst thing that can happen is that the mannequin dies and not a real individual.
Four years ago the School of Nursing had purchased a SimMan® Human Patient Simulator by Laerdal and simulation in nursing education has become a very published topic (Bond et al, 2004; Kuiper, Heinrich, Matthias, Graham, & Bell-Kotwall, 2008; Peteani, 2004; Seropian, 2003; Starkweather & Kardong-Edgren, 2008; & Spunt, Foster, Adams, 2004). Three years ago, the students participated in a mock code simulation with SimMan®, it went well and student comments were positive but I did not have any concrete method to establish this simulation experience as a good learning tool. So I developed my research on Use of Simulation in Mock Code Participation.

**Learning Goals and Description of the Innovation**

*Deborah Scigliano (Education) & Eric Garrett (Communication & Rhetorical Studies)*

This is a rather complicated and completely unique collaboration across schools. It takes some work to get a sense of what the project was.

**Course and Context in Which the Innovation was Introduced**

The “Raise Your Voice” Advocacy Project was a course assignment in GFDE 510 Theories of Teaching and Learning in Fall, 2009. This project was a collaborative venture between the School of Education’s GFDE 510 course and the School of Liberal Arts’ COMM 330-01 Integrated Marketing and Communication: Functions I – Public Relations course. Dr. Deborah Scigliano and Dr. Erik Garrett were the course instructors, respectively.

GFDE 510 is a graduate level education course that examines three theories of teaching and learning: a) Behaviorism, b) Social Cognitivism, and c) Cognitivism. Students create learning projects and analyze these projects through the lenses of each of these theories.

COMM 330 is an upper level integrated marketing communication course focusing on pragmatic issues engaged in by public relations professionals. This course is listed as a service-learning course and strives to teach students advanced public relations theory through engaging in the praxis of actually doing public relations with hands-on campaign work for a client.

**Motivation for the Innovation**

*Ultimately educators must advocate and public relations advocates must educate.* Two different faculty members wanted to teach their students very practical elements of their profession. This project began with Dr. Scigliano’s desire to teach her students about the importance for aspiring teachers to learn about advocating for their students. The motivation for this project began when Dr. Scigliano approached Dr. Garrett for possible collaboration. Meanwhile, Dr. Garrett was looking for assistance to help his students working on a public relations campaigns dealing with environmental education.
On the education side, many policies that are put into practice in education come from outside the profession. Local agencies (school boards), state legislatures, and federal legislatures create policies that impact the learning of students. It is important for teachers to be able to know how to effectively raise their voices at each of these levels of policy-making in order to bring about the best learning for their students.

The state of Pennsylvania recognizes the importance of advocacy by teachers. This is demonstrated in the Pennsylvania state competencies of Chapter 49 for candidates for teacher certification. See Appendix A.

On the public relations advocacy side, the father of the field, Edward Bernays, stated that public relations is a two-way street. It is not about publicity and profit; instead, it is about educating, informing, and persuading. Text books, training manuals, and the mission statements of the Public Relations Society of America tell students that this researcher and educator role is a large part of their daily task in the practice of public relations. See Appendix B.

**Learning Goals of the Innovation**

There was one primary goal and three collateral goals for the advocacy project for Education course, GFDE 510. The primary goal was: to build the understanding that teachers need to be effective advocates for their students. The collateral goals were: (a) gaining a deeper understanding of the theory that the students have learned throughout the course, (b) engaging in meaningful group collaboration, and (c) understanding that other disciplines have wisdom that is applicable in education.

From the public relations project there were two primary goals. The first was to be familiar enough with the role of advocacy in public relations to the point where students could serve as peer mentors for students outside of the discipline. The second was to understand the importance of research and education in constructing a campaign, being mindful of audience segments such as age level appropriateness. Secondary objectives were for students (a) to be able to see the practical connections to course theory, (b) be able to work collaboratively, and (c) learn the valuable skill of listening to “clients” and helping them communicate their message.

**Description of the Innovation**

Dr. Garrett served as the primary instructor for teaching advocacy to the education students with Dr. Scigliano providing reinforcement of the advocacy learning. Dr. Garrett’s students acted as peer teachers to share advocacy learning with Dr. Scigliano’s students. In return, Dr. Scigliano served as the primary instructor to consult the communication students with the specific education needs required to pass along the information they needed in their service campaigns. The project took place from Week 6 to Week 15 of the Fall, 2009 semester.
The first interactions were face-to-face. After this initial introduction, the majority of the interactions occurred virtually between the classes. To achieve the virtual communication, a collaborative Blackboard site was built for the two classes. Dr. Garrett and his students acted as telementors, online mentors, for the education students to build their knowledge of advocacy. Some of Dr. Garrett’s students did come to the education class from time-to-time to see how the learning was progressing.

The project itself was done by each of the small learning groups in the education course. Each group chose an educational issue for which they were passionate. Each group designed a presentation in which they advocated before the appropriate decision-making body for their issue. This advocacy presentation took the format of a simulation. Four of the five groups advocated before their local school boards and one group advocated before a committee of the state legislature.

The process for the assignment included (a) submitting a proposal to the instructor for their topic/issue, (b) researching and preparing their presentation, and (c) advocating their position with an in-class presentation incorporating the use of PowerPoint.

During the process of research and preparation, the students from both courses interacted via Blackboard Discussion Boards. Dr. Garrett’s students shared advocacy articles and suggestions for creating effective advocacy campaigns. Most of the preparation was done by each group outside of class with some limited class time devoted to preparation.

The final presentation was to incorporate the principles of advocacy that the education students had learned along with the principles of active engagement of learners which they had been learning throughout the course. Each group was to incorporate sharing in pairs, small group discussions, and/or questioning in the presentation. Assessment of the learning by their audiences was to be done to make sure that their message was understood. This assessment could be formal or informal. A one-page handout was to be given to each of the audience members.

The communication students were given the task of working on a public relations campaign serving a nonprofit in the Pittsburgh area. The nonprofit clients that were chosen all dealt with some environmental education issue. The four clients were: Earth Force, which was an environmental education group trying to communicate the importance of the environment to inner city youth that attended Hill District schools; Green for All, which was trying to communicate with low-income home owners throughout Pittsburgh about stimulus money available to weatherize homes; GASP (Group against Smog and Pollution), which was trying to communicate to the Pittsburgh city leaders the importance of adopting stronger air quality control standards; and Local Harvest, which was trying to communicate with the Pittsburgh school board about the importance of healthy choices for student lunches.
The students were placed in small learning groups that acted as student PR firms to handle each of the client’s issues. Each client visited our communication classroom twice, once at the start of the project and for the final presentations. Students were expected to construct a timeline and set of goals to accomplish for the client. The communication students then did research that paid specific attention to adapting their client’s campaign messages to various audience segments including specifically middle school and high school aged children. The communication students received specific instruction on different appropriate age learning levels from Dr. Scigliano and her education students. This information was then utilized to construct campaigns that were delivered in a portfolio and an oral presentation to the client. See Appendix C for assignment summaries for both courses.

Appendix C: Assignments

<table>
<thead>
<tr>
<th>Education GFDE 510</th>
<th>Communication COMM 330</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal</strong></td>
<td><strong>Task</strong></td>
</tr>
<tr>
<td>1. To understand that teachers need to be effective advocates for their students.</td>
<td>Produce a capstone product and presentation that demonstrates knowledge of advocacy for their selected issue.</td>
</tr>
<tr>
<td>a. To gain deeper understanding of educational theories learned in the course.</td>
<td>Synthesize theoretical learning that will enhance the in-class advocacy presentation.</td>
</tr>
<tr>
<td>b. To engage in meaningful group collaboration.</td>
<td>Work with small learning group to produce the advocacy presentation.</td>
</tr>
<tr>
<td>c. To understand that other disciplines have wisdom that is applicable in education.</td>
<td>Learn from public relations advocacy students about effective advocacy.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>c. Professional skill building – listen to “clients” and help them communicate their message.</td>
</tr>
</tbody>
</table>
Learning Goals and Description of the Innovation
Robert Sroufe and Diane Ramos (Sustainable MBA, Business)

Learning Goals of the Innovation (what students are expected to know and do)

Sustainability Consulting Project I offers a managerial experience for improving systems and processes and Sustainability Consulting Practicum offers client-site practice for leading strategic change, providing proving ground for applying graduate education.

Throughout both courses, students communicate across organizational levels, functional disciplines, and cultures in practical workplace situations to manage people and processes, and provide innovative, feasible solutions to improve an organization’s bottom line. As faculty observe student performance and collect evaluative feedback from clients, relevance of curriculum and teaching effectiveness are continuously refined. (See Appendix 1 for course goals, student outcomes and measurements from syllabus.)

Description of the Innovation (including scope)

“Tapping and developing the potentials of people and organizations to create the future rather than react to the present rests on two foundations: ...visions for the future and understanding the present reality.” (Senge, 2008) To involve our students in creating a sustainable future, the consulting courses are team-taught by an academic in industrial ecology and supply chains (Sroufe) and a seasoned adjunct with marketing and consulting management experience in Fortune 500 firms (Ramos). Drawing on existing tools and management methodologies from all business disciplines for application in a new, sustainable paradigm, the consulting engagements have become a catalyst for external clients, including Alcoa, PNC Bank, PPG Industries, Bayer Material Sciences, and Westinghouse, to leverage sustainability in operations and marketing.

While two professors solicit projects with external stakeholders and co-teach the consulting project and practicum courses, they are supported by faculty from other functional areas who serve as mentors for entire projects or specialized analyses. Project advisors have included professors from ethics, management, marketing, supply chain, operations, information technology and finance as well as faculty from our science and law schools, the business school dean, the academic vice provost, and alumni. Experts from Facilities Management, Small Business Development, Computer and Technology Services, Investment Center, and Gumberg Library also coach students. This broad-based collaboration has spurred creative problem-solving, groundbreaking research and publication throughout the university.

From a pedagogical perspective, instructors function as senior partners, overseeing student teams that represent Duquesne University with external clients. They provide overall direction, including standardized templates, tools, and protocols to assure quality control, sound
reasoning, and professionalism. The course schedule lists formal checkpoints and status reviews, but instructors also do informal coaching and monitoring to minimize risks while students are practicing new skills and management behaviors.

Appendix 1 - Course Goals, Learning Objectives and Measurements (from syllabus)

<table>
<thead>
<tr>
<th>Course Goals</th>
<th>Student Outcomes</th>
<th>Measurement Techniques</th>
</tr>
</thead>
</table>
| To provide opportunities to apply graduate course learning while contributing to the success of an organization | Documents client’s “as is” operating model
Analyzes client’s situation and external/internal influences
Identifies opportunities
Develops, creative, feasible solutions | Client satisfaction with project deliverables
Forecasted bottom line impact of student recommendations
Faculty evaluation of student project presentations |
| To nurture systems thinking and use of quantitative methods for decision-making | Applies appropriate business models and frameworks
Prepares sound financial forecasts and exhibits
Analyzes numerical data; provides meaningful insight
Applies technical tools intelligently | Client and faculty evaluation of how well students apply methodology and tools from core MBA courses |
| To seek innovative solutions with triple-bottom-line benefits | Understands stakeholder needs and organizational risks
Considers short- and long-term consequences of actions
Quantifies financial, social, and environmental impact | Client and faculty evaluation of project deliverables
Usefulness of student recommendations to client (when/how implemented?) |
| To foster effective small group problem solving and cross-functional teamwork | Manages project effectively, balancing work across team
Uses time and expertise of client and faculty wisely
Anticipates and resolves problems | Instructor observations
Client feedback
Peer evaluations |
| To promote regional economic development by sharing knowledge and best practices | Produces written deliverables worthy of publication or reuse as a teaching case
Recommends course of action that is adopted by client
Prepares and delivers seminar that contributes to learning community | Likelihood that client will implement recommendations
Faculty and client evaluation of deliverables.
Publication of case study |
| To prepare students for managerial and leadership roles in a competitive global marketplace | Plans and manages project from inception to completion
Delivers promise to client – on time and on specification | Client reported likelihood to sponsor another project
Client interest in hiring students from our programs |
Description of the Innovation and Evidence of Contribution to Student Learning

Robert Kollar, William Spangler, Ron Surmacz (Business)

Note that the scores on the simulation seem to be low (54%), but one needs to understand them in the context of business students’ first semester and the complexity of the task. At first, this stumped the committee. It helps to explain what scores mean, especially when they are different from what grades might be.

Description of the Innovation (including scope)

The innovation is not a single technique or strategy within the course, but rather is a combination of strategies and approaches which collectively define the fundamental nature of this new course. Specifically, the innovation is composed of the following:

- **The course is delivered by multiple instructors**, 19 during the fall semester, and each is an expert in his or her particular field of business. To provide a cohesive, thematic experience for the students, we developed an integrated syllabus which carefully delineated each faculty member’s responsibility on a session-by-session basis. (The course syllabus and session-by-session schedule are included in the appendices.)

- **The course is coordinated by the Associate Dean**, which essentially assigns ownership of the course to the entire School of Business (a point clearly communicated to the students). The Associate Dean coordinated and co-taught the course, worked closely with each faculty member and the two graduate teaching assistants, appeared in the classroom at least once per week (in part to introduce each new faculty member), managed the Blackboard site and data from the Personal Response System (‘clickers’), and compiled the exams and quizzes. Although the course was taught collectively, it was managed as though it were taught by a single instructor, which reinforced the thematic approach necessary for the course’s success.

- **The course includes a team-based, semester-long project** in which small groups of students analyze problems and make decisions in the context of a computer-based business simulation (called ‘Foundation’, developed by the company MSI). Each student group manages a company in its own virtual world, wherein the company is in competition with four computer-managed companies. The primary goal of the simulation is for students to understand the nature, complexity and interdependency of four primary areas of a business: research & development, production & operations, finance & accounting, and marketing.

- **The course includes two ‘capstone’ assignments**, both of which were used to assess the degree of student learning at the end of the semester. The first is a computer-based, outcomes assessment module, integrated with the business simulation, called CompXM. The second is the development of a business plan, which is a standard document produced by a business – often a small business – in support of funding for a business venture of some kind. Both are
Evidence of the Innovation’s Contribution to Student Learning

We collected evidence of learning in three areas, two direct (results from the CompXM exam, and completion of the semester-end business plan) and one indirect (results from an on-line survey). Both sets of data were collected at the end of the semester, and both address in various ways the learning goals established for the course. We focus on the learning goals on which the innovation was most impactful. (All of the course learning goals and their connection to the program goals of the school of business are shown in the course syllabus in Appendix 4).

Direct Evidence: CompXM

CompXM is a follow-on module to the semester-long business simulation, and is a method of determining each student’s level of learning, particularly in the simulation. Unlike the ‘Foundation’ simulation, CompXM is an individual assignment, and therefore it assesses students on an individual basis. It presents the student with an individual simulation involving four rounds of decisions, along with a series of ‘board queries’ asked between each of the rounds (example questions are shown in Appendix 1). The entire process takes 5-7 hours over a 1-2 week period.

Notably, CompXM was developed specifically as an outcomes assessment tool, and is marketed to business schools as a means of providing evidence of learning to the AACSB, our international accrediting body. (Appendix 2 shows how CompXM attends to a sample set of program level goals, as described by MSI, the simulation company.) In the context of GTB, CompXM addressed the following learning goal:

Learning Goal 1: a) explain the basic principles of economics, management, marketing, finance, accounting, information technology and business law, b) understand the value proposition of a company from a systems perspective, and c) understand how the functional areas in an organization operate together through cross-functional business processes, using an enterprise resource planning perspective

Results

As shown in Appendix 3, the results are presented in terms of the percentage of students who correctly answered each question, compared to the results of students taking the same exam across the country. In this respect, it is important to note that most students taking CompXM are college seniors and graduate students, who have completed most of the their prerequisite business courses and are taking the exam as part of the “Capstone” simulation, which introduces some more advanced concepts. When viewed in this context, the results are encouraging. For the Gateway to Business students, the average ‘percent correct’ figure across all of the questions was
54%, while the average across the entire population was 70%.

From a program-level assessment perspective, it will be interesting to re-test these same students in their senior year, to judge their progress after completing their program of study and the Capstone simulation. We also are considering putting our current seniors through the Capstone version of the simulation and then testing them using the same CompXM exam.

**Direct Evidence: Business Plan**

A business plan requires the writer to apply and integrate his or her knowledge of the various functional areas of business, including a marketing plan, financial analysis, competitive analysis, and so on. As such, it is an effective capstone indicator of student learning. A management professor developed the business plan assignment, the Associate Dean developed the grading rubric, and the two graduate assistants completed the actual grading in consultation with the associate dean. Two learning goals were addressed:

- **Learning Goal 1**: d) describe the issues involved in starting a business, and e) describe the purpose and components of a business plan
- **Learning Goal 3**: d) follow a standard process in analyzing a business case, and e) analyze and develop a simple business plan

**Results**

The grading rubric was relatively simple, with criteria based on what would be expected of freshmen business students. The overall grades were very good. The class average was 91.8%, and the individual averages for the two graduate assistants were consistent: 93.1% and 90.6%. In its broadest interpretation, this indicated that most students were able to apply and integrate their acquired knowledge of the various business areas to the development of a professional business plan. This also addressed learning goal #1 (i.e., understand functional areas and how they are interrelated).

**Indirect Evidence: On-line Survey**

At the end of the semester we used Blackboard to conduct a survey of student opinions, interests and satisfaction. Participation in the survey was excellent: 289 out of approximately 305 students completed the survey. The results are discussed below.

**Learning Goal 1: understand each of the business functional areas & how they are inter-related.**

Almost 80% of the class either strongly agreed or agreed with the assertions: “I now have a better understanding of how a business operates.” and “I have a better understanding of the role and importance of each business function within a company.”
Only about 1/3 of the class strongly agreed or agreed with the assertion: “The computer-based simulation helped me to understand how the functional areas of business work together.” This is in contradiction to the direct evidence, particularly from CompXM, which showed that the students did acquire an understanding of how the functional areas are integrated (many of the board queries test knowledge of the relationship between two or more areas). Therefore, this issue requires further investigation. It could be an artifact of the question itself, the manner in which the simulation was presented to the students, or simply that a fuller understanding of functional integration will require more time and the completion of more courses. Again, it will be interesting to ask these same questions of these students during their senior year.

Learning Goal 3: work in a team to analyze a business problem or case, and provide a solution

57.7% either strongly agreed or agreed with the statement: “The computer-based simulation helped me to be a better participant in a team project.” Only about 16% disagreed or strongly disagreed with the statement.

Learning Goal 4: demonstrate the communication and organizational skills required in business

About half of the class agreed with the assertion: “The computer-based simulation helped me to understand the interpersonal & communication issues involved in working in a team.”

Beyond the specific learning goals for the course, we had established a set of meta-level goals related to improving student expectations about the overall learning environment of the business school, now and throughout their program of study. This included the following set of questions and results:

- “Compared to what I thought before I entered the business school, I now believe that the Palumbo-Donahue School of Business will be …” 1) more difficult than I thought (56.7% agreed), 2) more interesting (81.1% agreed), 3) more fulfilling (83.2% agreed), and 4) more interested in my success (84.5% agreed).

Evidence of Contribution to Student Learning

Bridget Calhoun and Allison Morgan, Physician Assistant Department

These faculty members chose to present their evidence in terms of Duquesne internal and external evidence. They analyzed information they already had available about student learning relevant to the innovation; assessment is integrated into their curriculum in a variety of ways, followed by a standardized external exam. On the various measures, they zeroed in on the aspect of learning relevant to their goals. They used four direct and three indirect measures of learning, and presented multiple perspectives: faculty, student, preceptor, patient.

Evidence of the Innovation’s Contribution to Student Learning

Internal Evidence
1. Students' performance on the complete history and physical exam (CH&P) exercise as evaluated by faculty proctors. The average score earned on this exercise was a 47.16/55 (85%) with a range of 37-55/55.

2. Student performance on CH&P exercise as evaluated by standardized patients. The overall average score for all four areas of evaluation; communication, interviewing skills, interactions and overall performance was a 9.6/10 with a range of 5-10/10. (Appendix B)

3. Student evaluation of the CH&P exercise. Completion of the self administered, post-activity did not affect their academic requirements or provide them with “extra-credit”. The questionnaire was completed by all 30 students even though it was not required. Students evaluated the exercise favorably in all categories. (Appendix C)

External Evidence:

1. PACKRAT results: The PACKRAT is an assessment tool utilized by PA training programs nationally to quantitatively document student learning in various areas of medicine. Students complete the PACKRAT assessment twice throughout their training; first at the end of their didactic training and again at the completion of their clinical training. Scores are compared among PA programs based on the average score obtained by each program as a whole. Collectively, the Duquesne University PA Program Class of 2005 scored above the national mean for both of their PACKRAT assessments. (Appendix D)

2. Preceptor student evaluations: Clinical preceptors are asked to evaluate fifth year students in many areas including medical history taking skills and physical exam skills. The class of 2005 had a higher overall evaluation score for both medical history taking and physical exam skills compared to the class of 2001, which was prior to the innovation and was the same size class. (Appendix E) The overall score on the CHP exercise during the didactic year also loosely predicted those students who would excel throughout their clinical rotations and those who would have difficulty with patient interactions. (Appendix F)

3. Student program assessment: During the clinical year of the program, students are required to complete weekly summary reports. Students report which didactic course best prepared them for each rotation. Twenty-eight (n=29) students reported that History and Physical Exam I, II, and III best prepared them for their eight required rotations. During the students’ final clinical rotation, an exit interview is completed with one of the core faculty members. Students are asked to assess the Duquesne University PA program by listing their perceived program strengths and weaknesses. Exit interviews conducted for the graduating class of 2005 showed that 14/29 students specifically listed the History and Physical Exam courses as a program strength.
Evidence of Contribution to Student Learning  
Barbara Adams (Gumberg Library); Ellen Gawalt (Chemistry & Biochemistry)

Direct Evidence

The students are asked to demonstrate their knowledge of the library, sources, and chemistry research databases in an objective multiple-choice format pre- and post-assessment format (See Appendix). There are five questions related to each of the four goals. We were careful to avoid redundancy with the COSC 030 class (Research and Information Skills Lab) in the assessment and the program and to stay with subject-specific material. The assessment is given the first and last weeks of class to ensure that we are testing the students based on their information literacy prior to the course and information that the students learn in the program. This program has been used three times and the assessment was tweaked after the first year to remove subjective questions due to the variety of answers received and the difficulty in grading.

<table>
<thead>
<tr>
<th>Year</th>
<th>Pre-Assessment Average</th>
<th>Range</th>
<th>Post-Assessment Average</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>47%</td>
<td>30-70%</td>
<td>67.5%</td>
<td>45-90</td>
</tr>
<tr>
<td>2005</td>
<td>41.5%</td>
<td>20-60%</td>
<td>68%</td>
<td>50-95</td>
</tr>
<tr>
<td>2006</td>
<td>11.8%</td>
<td>0-30%</td>
<td>53.5%</td>
<td>40-75</td>
</tr>
</tbody>
</table>

Overall, we feel that the students showed great improvement each semester but that the assessment indicated several weaknesses in the program. In addition, the results emphasized that engaging in research is a complex process that takes more than one semester to learn. We would like to note that every student improved their score through the use of the recitation sessions. Also, there was an improvement in the average score between the pre- and post-assessment scores for each year. In the third year of the program you will see a dip in the overall scores. In this semester, Dr. Jeffrey Evanseck taught Honors General Chemistry and administered the program. When he gave the assessment, he instructed the students to answer only questions that they felt sure they knew the answer. These instructions differed from the earlier administrations and may have adversely affected their scores.

We were concerned by the low scores and would like to see them improve. In order to improve their scores, we looked deeper into the assessment results. The students fared well on
Goals 2 and 4. Those related to navigating Gumberg Library and identifying and reading primary sources. The more complex tasks of choosing appropriate research databases (Goal 1) and using effective search strategies in each database (Goal 3) were difficult for the students. The use and understanding of the strengths and weaknesses of the databases takes practice. These differences will become apparent to the students as they advance in their academic career and their knowledge may be better tested at the end of the second semester, after they write their research paper. Additionally, results from the assessment caused us to add an additional session on research databases in the third year and to add specific handouts delineating the differences between the databases.

In the second semester of the program, the students return to the library several times with their professor. This gives the students an opportunity to search for appropriate topics and information for their research paper while the professor is present. The students produce a 5 page research paper at the end of the semester and the majority of their grade is based on using and citing references appropriately. An exemplary paper is attached, along with the grading requirements in the appendix.

**Indirect Evidence**

Although the direct evidence of the assessments showed a somewhat positive effect of the innovation within the first semester each year, indirect evidence was strongly positive. Verbal feedback from students after their second semester research assignment in the first year of the innovation indicated that the library sessions had been very helpful and necessary for them to be able to complete their lab and research assignments. Therefore, in the spring of second year of the program a survey was administered. It consisted of five questions aimed at the process of research and usefulness of program (See Appendix for complete survey). There were four choices for rating the parts of the program: Very useful; Quite useful; Useful; Not Useful. There were twenty three respondents to the survey. The results were overwhelmingly positive as indicated in the following highlights of the survey.

- All 23 felt the first semester sessions were very or quite useful
- 20 felt the second semester library visits to refresh their database skills with the professor were very or quite useful
- 16 felt the recitations on reading articles were very or quite useful
- All of the sessions were “useful” according to the students
- 22 used the physical library to do research
- 12 different research databases were used by the students
We feel these results show that the sessions contributed to the students learning of chemical literacy skills and that they gave the students the confidence to try using databases not covered in class because they understood the process of research at the end of their first year at Duquesne. Therefore, we were delighted that the students did not just memorize facts or learn “click” sequences, but that they learned a process that is important to their careers as chemists. We were also happy to see that the students felt that the program was valuable to them an entire semester after completion of the program.

Professors in the chemistry department feel that the students have benefited from this program. Dr. Jeffry Madura states in his letter from the chair (Full Text in Appendix), “The students are better prepared to enter the research laboratory by knowing where to find information about their project. Overall I find the students coming from Dr. Gawalt’s Honors General Chemistry I course better prepared to critically evaluate new problems and develop solutions. This comment is based on first-hand experience since I have taught the Honors General Chemistry II course.” Dr. Jeffrey Evanseck states in his letter (Full Text in Appendix), “My ultimate goal was to have the students present a 5-page paper by the end of the semester that reviewed the research of any faculty member in the chemistry and biochemistry department. The end product was fantastic. All of the students were able to identify a meaningful topic, gather the most pertinent and timely reference materials, and construct a well supported and document manuscript. The information literacy program has had a positive education impact on the students, and is responsible for the students excelling on their final reports.”

Degree of Innovation
Bridget Calhoun & Allison Morgan, Physician Assistant Department

The authors argue for the innovativeness of the way in which they used patients to promote student learning. This is helpful because the evaluation committee consists of faculty representatives from a variety of disciplines.

Standardized patients have proven to be effective educational tools and have been used extensively in the education of physicians.1,2,3 Approximately 95% of medical schools in the United States currently use standardized patients and 85% use them as a component of student assessment.5 Standardized patients are most often used in somewhat passive roles when student interactions with them could be observed either directly, by videotape, or through a one-way observation window by a separate evaluator. Within medical education (for both physicians and physician assistants) a large component of formal training occurs in hospitals, clinics and private physician offices, so students interacting with patients is not innovative. What makes this project unique is three-fold: this is a new teaching activity at Duquesne University; secondly, complex clinical problem solving is performed in the context of a real-life patient interaction and thirdly,
the comprehensive evaluation of students from both a faculty perspective and a patient’s perspective. Many physician assistant programs use published medical scenarios which are read to a student who is evaluated by choosing appropriate physical examination techniques on a “healthy” model. Rather than detecting physical examination findings, the proctor provides the physical examination findings to the students while the exam is being performed. The social interactions are not assessed, only technical skills. Other physician assistant training programs (such as Saint Francis University in Loretto, Pennsylvania) have students practice physical examination skills on in-patients of the local Veteran’s Administration Hospital, however, the patients are not involved in the student evaluation. The concept of having patients participate in student evaluation has not been described by any of the other 133 physician training programs in the United States. This project’s innovative design allows for comprehensive evaluating of student performance in all aspects of patient care. From the critical and often undervalued social interactions, to recognizing physical abnormalities and accurate documentation in the medical record, this exercise integrates all of their professional education.

References


Degree of Innovation

Barbara Adams (Gumberg Library); Ellen Gawalt (Chemistry & Biochemistry)

The first year the authors submitted this proposal, they did not argue well enough for the uniqueness of the initiative, and their evaluating peers said, “isn’t this what everyone does?” They gathered more evidence of learning, and they argued persuasively for the innovativeness, and received the award.

The Chemical Literacy Program was developed at Duquesne by Ellen Gawalt and Barbara Adams. The collaboration between Barbara Adams and Ellen Gawalt was initiated in response to the Summer Institute for Teaching with Technology (SITT) 2004 grant proposal call for collaboration with the library on the Middle States Guidelines for Information Literacy campus-wide. Input was given by the Chemistry Department Chair, Dr. Jeffry Madura, and Director of Departmental Affairs, Dr. Jeffrey Evanseck, as well as librarians Diana Sasso, Director of Information Services, and Kathryn Fowler, Instruction Librarian. The program was developed around the long-term goal of producing student-researchers in the Chemistry Department.
This innovation is considered unique at Duquesne and we were therefore awarded the SITT grant in the summer of 2004 and subsequently invited to present the program at a LunchByte program in December 2005. Our ongoing collaboration consisting of development, assessment, revision, and assessment between the library and a disciplinary faculty is unique. The collaboration is working to meet the academic needs of the chemistry department’s student-researchers and faculty and expose the students to the resources and services available through the Gumberg Library.

We presented this collaborative innovation at the Pennsylvania Library Association Annual conference in the fall of 2006. The opportunity to present was awarded through a competitive process and our presentation was well received. Approximately fifty people attended the session. We received many positive verbal comments that are echoed in the following email excerpt, “I really enjoyed your presentation about Scientific Information Literacy at PaLA this week. Although I took copious notes, would you please send me your PowerPoint presentation as well as the pre/post tests you mentioned at your talk?” Three people requested the assignments via email and we posted our PowerPoint presentation on the Pennsylvania Library Association Web site due to the volume of requests after the talk, at http://www.palibraries.org/events-conf/2006Conference/SciInfoLiteracy_files/frame.htm.

The program is now an integral part of our Honors program. In its third year, Fall 2006, Dr. Jeffrey Evanseck taught Honors General Chemistry and requested the inclusion of the program in his course. As a result, the materials were given to him, and he and Barbara Adams administered the program with guidance from Ellen Gawalt. Additionally, the Department of Chemistry and Biochemistry has used this program to model a program for our incoming graduate students in their Scientific Presentation course. Overall, the chemical literacy program has impacted students’ learning and understanding of the chemical literature and the process of research and will continue to do so in future years in the Department of Chemistry and Biochemistry.