

The Document of Innovations in Teaching and Learning at the University of the Sciences in Philadelphia 2001

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The Document of Innovations in Teaching and Learning at the University of the Sciences in Philadelphia

The Teaching and Learning Center of the University of the Sciences in Philadelphia is proud to produce the second annual document of educational innovations within this university. Included in this edition are various sustained innovations. These are innovations that were featured last year and continue to be implemented this year. Plus, many new and exciting innovations in teaching and learning are featured. The aim of disseminating these innovations is to improve teaching and learning within our educational programs. This document is disseminated throughout the campus and to interested people outside the University to give increased recognition to individual faculty who strive to improve their teaching as well as to others who assist students to learn more. Hopefully, the document will help faculty in collaborating on new ideas and will inspire others to try new methods to improve their teaching and learning.

All of the innovators welcome feedback on their ideas. If you use or adapt an innovation, please give the author credit and tell that person how it worked.

To submit a description of an innovation for next year's edition, use the submission form in the back of this document. Please submit a paper and an electronic copy.

**Phyllis Blumberg, Ph.D.
Director of the Teaching and Learning Center
June, 2001**

Sustained Innovation

Title of innovation Attendance Survey

Name of innovator Joan Anderson

Telephone Number 215-596-8872 **email address** j.anders@usip.edu

Department Pharmacy Practice/Pharmacy Administration

Type of students 1st and 2nd year

Course or activity where implemented Orientation (“Dean’s Seminar”, PP181, 283)

Describe goals of innovative educational activity

Take attendance rapidly in large class, which meets for only one hour weekly; gather non-confidential information about the students; encourage attendance at all/most class meetings.

Describe the innovation and its implementation

Distribute brief survey at beginning of class, which can be completed in 2-3 minutes and includes each student’s name and University ID number. Surveys are sorted alphabetically and presence/absence recorded on grade sheet. Students lose 5 points for unexcused absence. (Course grade is composed of 100 points.)

Reflect on what’s working and why it is working

Used on 4-6 occasions (unannounced) throughout the semester, this does not require much class time, but provides pooled data about the class cohort. This information is used in some class discussions, course planning, and program assessment.

Describe student reaction to the innovation

Essentially none. No one has resisted completing the survey (though a form with only the name and ID # would be accepted as evidence of attendance). Random use challenges students to decide whether or not to attend each class meeting.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

I have no other course responsibilities but have shared this strategy with colleagues who may also adopt it for their large classes.

Other comments

Sample survey

Service Survey
PP283
February 23, 1999

Name: _____

ID#: _____

1. Did your high school require a "community service" activity for graduation? _____
2. Check below the service activities in which you have been involved since you became a college student (either at home or in the campus community)

- _____ meal program at homeless shelter
- _____ collecting food or clothing for homeless
- _____ Habitat for Humanity or similar construction programs
- _____ teaching or tutoring (children or adults)
- _____ adult or child care
- _____ disease-specific volunteer efforts (e.g. cancer, diabetes, immunization programs, etc.)
- _____ other (please describe:)

Title of innovation Enhancing Physics Learning Through Repetitive Problem Solving

Name of Innovator Tarlok Singh Aurora

Telephone Number 215-596-8911 email t.aurora@usip.edu

Department: Mathematics, Physics, and Computer Science & Statistics

Type of students second year students with different majors

Course or activity where implemented: PY 202 (second semester introductory physics course)

Describe goals of innovative educational activity

1. To enhance problem-solving skills,
2. To improve retention of learned material,
3. To guide students in solving problems,
4. To emphasize the importance of writing down important points while reading since most of the tests are in the written format.
5. To enable students to learn to analyze their errors in problem solving, and re-attempt to correct these errors.

Describe the innovation and its implementation

In this innovation, two things were tried. In the first method, the students were asked during recitation to solve problems similar to the ones previously solved in lecture. Upon completion, the students were asked to look at their lecture notes to try to identify their mistakes (if they did not do it correctly). After they felt that they had understood their errors, they were asked to re-solve the problem without looking at any notes. By comparing the pre- and post-solutions, students were able to assess their retention ability. In the second method, some changes were made as described below.

Method 1

1. Assign problem and ask the students to attempt to solve it.
2. Ask them to check their class notes and learn to correct the mistake they made.
3. Students re-solve the problem without looking at the class notes.
4. Collect all work.

Method 2

1. Assign problem and ask the students to attempt to solve it.
2. Collect all work.
3. Give guidance on how to solve the problem. (No looking at lecture notes.)
4. Re-solve the problem without looking at the class notes.
5. Collect all work.
6. (Instructor) compare the two sets of solutions.

Reflect on what's working and why it is working

Observations from these exercises (method 2): A few among the students who were able to solve the problem in the first attempt had made minor mistakes such as missing units. Some of the students, who got it right the second time, had improperly used the calculators in the first attempt. The students who were unable to solve the problem in two attempts were found to have difficulty with basic concepts and definitions, could not use the calculator properly and had difficulty in even getting started. And it is this group of students that needs additional help to succeed. This exercise enforces the saying: "Practice makes one perfect"

Describe student reaction to the innovation

The students liked this type of quiz exercise since most of them got a second chance to see and correct their errors, and get some credit for their efforts.

Will innovation be sustained within the course? Yes

It will be sustained. However, it is time consuming to do it during every period. Some course restructuring may be necessary if this is to be done in every recitation.

Will you implement this innovation in other courses? Yes

What advice would you give to other people adapting this innovation?

Collect the problems solutions sheets after each attempt, not everything at the end.

Title of innovation Multiple-choice tests with partial credits and teaching while testing

Name of Innovator Tarlok Singh Aurora

Telephone Number 215-596-8911 email t.aurora@usip.edu

Department Mathematics, Physics, Computer Science & Statistics

Type of students second year students with different majors

Course or activity where implemented PY 202 (second semester introductory physics course)

Describe goals of innovative educational activity

To award some credit for partially correct solution using the multiple-choice questions (MCQ).

Describe the innovation and its implementation

In order to award some credit for partially correct answer on a test, the multiple-choice questions were re-designed. Ordinarily, on a MCQ, a student gets full credit for the correct choice of an answer or nothing for the wrong choice. In order to give some credit for some understanding of a given problem, that problem was asked on the test as a set of several problems, leading to the final solution. As a result, if the students knew partial solutions to the problem, they received a partial credit.

As an example, take the problem: a water droplet is suspended in air due to the electric field of the Earth. Question: Find the size of the droplet.

Instead of asking just one question as above, one can ask a series of questions (with multiple choice answers provided), such as

1. What are the forces on the droplet? [Multiple choice, which contain several types of forces to choose from].
2. What is the force on the droplet due to the electric field? [Choice could be the symbols or numerical values].
3. Is (Are) Newton's law(s) of motion applicable in this problem?
4. If you answered, "YES" in #3 above, Which of the following Newton's law(s) is applicable? [Choice would be the list of Newton's three laws and a combination of these]
5. Calculate the mass of the droplet.
6. Calculate the radius of the droplet.
7. What are the units of the radius?

In this way, the students have an opportunity to earn some credit if they have some understanding of the subject matter.

Reflect on what's working and why it is working

It was tried only once, and needs more data.

Describe student reaction to the innovation

The students prefer this method over ordinary MCQ, once you explain to them the benefits.

Will innovation be sustained within the course? Yes

Will you implement this innovation in the other courses? Yes

Describe

In large sized classes.

What advice would you give to other people adapting this innovation?

It is time consuming to design these tests. The method may not be suitable for very simple problems.

Title of innovation Using Excel to Plot Equipotential Lines in a Physics Experiment

Name of Innovator Tarlok Singh Aurora

Telephone Number 215-596-8911 email t.aurora@usip.edu

Department Mathematics Physics, Computer Science and Statistics

Type of students second year students with different majors

Course or activity where implemented: PY 202 (second semester introductory physics course)

Describe goals of innovative educational activity

To draw smooth curves through experimental data to visualize equipotential lines, that is, the lines on which all points have the same electrical potential, for the given electric charge distribution.

Describe the innovation and its implementation

The experimental setup involves two fixed metal conductors placed in a water tray. Two additional conductors are used as the probes. One of the probes is fixed and the second probe is moved around in water to locate points where the electric potential is the same as the fixed probe. This process is repeated with different locations of the fixed probe. The result is a set of points or (x, y) coordinates.

Usually, the students connect these sets of points manually. In spite of good drawing abilities, students sometimes do not draw smooth lines but simply tend to connect point. This may be due to scatter in the data.

In this innovation, the sets of data were entered into Excel. Using the graph menu, scatter graph and smooth line options were picked. Excel gave an excellent, smooth curve reflecting the pattern of the data points. (This was different from the "best-fit" feature in Excel).

Reflect on what's working and why it is working

It worked well. The students were able to see the shape of the lines and could easily do the subsequent work in the experiment.

Describe student reaction to the innovation

I believe they liked it. A student inspired it.

Will it be sustained in the course? Yes

It has been shared with some faculty.

Will you implement this innovation in the other courses?

Describe

It may be applicable in similar cases where only a smooth line is needed to see the trend, in the experimental data without the "best fit".

Innovation Using Classroom Assessment Techniques to Foster Higher Order Thinking and Occupational Therapy Knowledge

Name of Innovator Gina F. Collier

Telephone Number 215-596-8694 email g.collie@usip.edu

Department Occupational Therapy

Type of Students: 4th Year Occupational Therapy Students

Course where implemented: OT 455 Evaluation and Assessment

Describe goals of innovative educational activity

The new strategy implemented was that of using Classroom Assessment Techniques (CATS). The general goals of using CATS are to find out what students are learning in the classroom and how well they are learning it. Using this formative approach, students in OT 455 were specifically assessed on how well they were learning higher order thinking skills and discipline specific knowledge in Occupational Therapy. The instructor then utilized this information to modify following classes as needed to direct learning activities toward areas of learning deficiencies.

Describe the innovation and its implementation

Classroom assessment techniques are strategies that are conducive to learning in that the approach is formative, learner-centered, instructor directed, mutually beneficial and context-specific. By filling out the teaching goals inventory in Angelo and Cross's Classroom Assessment Techniques the instructor systematically choose which teaching goals would be focused on in OT 455. Two techniques, the Muddiest Point and the Background Knowledge Probe, were used because they relate to the goals of increasing higher order thinking and discipline specific knowledge. These CAT's were primarily implemented after the first class of a new content area. The results could then be used to modify the next class.

Reflect on what's working and why it is working

The assessments are easy and quick to implement and analyze. Specific information regarding what students are learning or not learning is obtained through the assessments. The instructor was able to address student concerns in the following class session.

Describe student reaction to the innovation

Students readily filled out the anonymous assessments, which were given the last 5 minutes of class. Students appeared attentive and interested in having their concerns addressed, usually at the beginning of the following class. Additionally, in the final course evaluations the areas of: instructor recognizes when students fail to understand material and instructor explains material clearly were all improved from the prior year in which the same instructor taught the course.

Will the innovation be sustained within the course? Yes

The instructor will continue to use this strategy. Throughout the semester the instructor appeared to have clearer understanding of the students' grasp on material. Results from the assessments at times were surprising such as the students indicating they had not understand class material when the instructor had thought the material was covered clearly. Receiving this information early while still covering this section of material allowed the instructor to address student concerns and instructor concerns quickly, usually in the next class session.

Will the innovation be used in other courses? Yes

The instructor plans on using CAT's in one other course in the upcoming year.

What advice would you give to other people adapting this innovation?

Start out small primarily using one or two classroom assessments. CAT's are a quick way of ascertaining information about student thinking. Although my class was small, there are different CAT's methods and techniques that can be used for very large groups. Additionally, different CAT's assess a variety of learning objectives thus can be used for virtually any type of class or topic.

Title of innovation Development and Use of a Course Website to Deliver a Drug Information Course Online

Name of innovator Lisa E. Davis

Telephone Number 215-596-8831 email address l.davis@usip.edu

Department Pharmacy Practice Type of students Flexible-Option Doctor of Pharmacy students

Course or activity where implemented PP641 Biomedical Resources Information

Describe goals of innovative educational activity

1. Develop and utilize a website to facilitate course activities and provide learning resources online.
2. Utilize available technology to reduce paper flow and costs associated with course management.

Describe the innovation and its implementation

A web page was developed using Microsoft FrontPage and a course template (developed by Amy Christopher) to create a course website for the course: [<http://www.usip.edu/flexdi>]. Students met on campus for a 1-day workshop to obtain course information and to learn how to access and utilize electronic drug information resources. Course assignments were posted on the website. Students e-mailed their completed course to the instructor which were graded, scanned into a PDF document, and returned to the students via e-mail. An online quiz was developed using CyberExam but was not implemented due to student access problems. A bulletin board was available on the website for student exchange among themselves and with the course instructor.

Reflect on what's working and why it is working

Students gained skills through completing independent projects and receiving feedback from the instructor regarding their work. This activity does not require that students come to campus and attend a scheduled class. The students were able to work independently yet receive continuous feedback throughout the semester. They appreciated the flexibility that an online course provided.

Describe student reaction to the innovation

During prior course offerings, course materials were posted on the Electronic Reserve system (ERes) which students were very positive about. However, this format is primarily a library only - students appreciated the interactivity of a "real" course website.

Students were also quite interested in taking quizzes off-campus but since a few appeared to have difficulty logging onto CyberExam, this exercise was deleted

during this semester. Students stated that having the returned course materials as PDF files was efficient and unique. The students were very clear that the 1-day workshop was essential, allowed them to put faces together with names, and facilitated networking among them.

Some students had difficulty keeping up with course deadlines. Also, some of the material that they learned during the 1-day workshop was forgotten over the course of the semester. A series of "learning tips" and summaries of instructions that could be sent out regularly via e-mail during the course of the semester might be helpful.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

The PP608 Hematology-Oncology Flex Module will be delivered using a combination with on-campus recitation discussions, online course materials, and online testing.

Other comments

Onsite workshops/introductory sessions are probably beneficial to include as courses for online delivery are being developed.

Title of innovation Use of Computerized Simulated Patient Cases to Develop and Assess Students' Clinical Reasoning Skills in a Therapeutics Laboratory

Name of innovator Lisa E. Davis

Telephone Number 215-596-8831 email address l.davis@usip.edu

Department Pharmacy Practice:

Type of students 5th year Doctor of Pharmacy students

Course or activity where implemented PP555 Pharmacotherapeutics Laboratory

Describe goals of innovative educational activity

1. Use a computerized simulated patient case as a source for students to collect and organize pertinent patient data.
2. Determine student's ability to identify the correct clinical problem for the patient case (hypertension).
3. Evaluate student's clinical reasoning skills using the computerized individual student performance assessment tool.

Describe the innovation and its implementation

Pre-case data was collected to assess students' prior experiences (number of patient interviews, medical chart reviews) and their self-assessment of their abilities for these activities. Students received an introduction to the computerized program and received navigation instructions and materials. They then spent approximately 1.5 hours reviewing the computerized case independently. Students are able to interview the patient, review laboratory and diagnostic tests, conduct physical examinations, and develop problem lists but can do any/none of these activities in no particular order. They obtained data that they thought was pertinent to the patient case and recorded it on a data collection sheet. Instructors graded the students based on the amount of pertinent data that was written on the data collection sheet. A follow-up questionnaire was used to collect data regarding students' self-assessment and their evaluation of the program. In addition, instructors were asked to evaluate each student based on the student's apparent degree of difficulty using the program. The computer performance assessment was used as a source of group statistics but was not used to determine individual student grades for this exercise. At the end of the laboratory session, the instructor reviewed the process and highlighted key aspects of the patient case that should be considered.

Reflect on what's working and why it is working

Most students rated their ability to obtain and record pertinent data from this case as 3, 4, or 5 (1 being least confident and 5 being most confident). Although a small number of students expressed their dislike for this exercise, many indicated through written comments that this was a "great learning experience."

A review of the pre-case data showed that students rated themselves as mostly confident in their ability to collect relevant patient information from a medical chart and interview. This may reflect an underlying level of confidence regarding their ability to perform this task successfully.

The "open-ended" nature and large amount (some irrelevant) data that is included in this case allowed the students the opportunity to use their therapeutics knowledge and previous experience as they sorted through the data. Thus, the activity provided a sense of accomplishment and reinforcement of knowledge and skills that they have been acquiring. In addition, the students' were not "graded" on their success with the computer program and this probably minimized any anxiety that they might have had using this new technology.

Describe student reaction to the innovation

Student's overall evaluation of this computerized case and laboratory exercise was positive; most students rated their level of interest in using these simulated computerized patient cases as 4 or 5 (1 being no interest with 5 being very high level of interest). Twenty-nine students felt that the amount of information available in the case distracted them from obtaining and reviewing pertinent data.

Will the innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

Computerized patient cases (with patient problems related to hematologic and oncologic disorders) will be incorporated into course activities for the Hematology-Oncology (PP608) Flex Module. In addition, 5th year Doctor of Pharmacy students will have access to these cases outside of class as an opportunity to practice their skills in evaluating problems and patient data while they are learning about anemia's and certain adult cancers.

Other comments

The students' interest and the amount of positive responses regarding this activity were among the highest that I have ever observed. Students should be given additional opportunities to work individually using computerized simulations.

Title of innovation Student Presentation of Course Content

Name of innovator Ara DerMarderosian

Telephone Number 215-596-8915 email address a.dermar@usip.edu

Department Biology Type of students 3rd-4th year students

Course or activity where implemented, Basic Nutrition Course

Describe goals of innovative educational activity

Promoting active learning, peer teaching

It gives students an opportunity to apply the skills they have learned in the basic course years.

Describe the innovation and its implementation

Providing a course outline, assign students to present each chapter of a book on the subject each week followed by the students writing multiple choice questions themselves, which the professor screens and uses. I have used this idea for my basic nutrition course for a number of years with good success and reviews. It allows me to interject comments and questions, as well as do cooking and food demonstrations, which the students love. Of course these are 3rd-4th year students would work well in the advanced classes. I limit the course to 20 students per year as an elective.

Reflect on what's working and why it is working

Advanced students who have the maturity and knowledge base to make presentations on content.

Describe student reaction to the innovation

Some have indicated they like the chance to give oral presentations, others are not too happy, but later have admitted that it was a good experience.

Will innovation be sustained within the course? Yes

Sustained Innovation

Name of innovation Cognition Pilot Research Project

Name of innovator Pat L. Ditunno

Telephone number 215-596-8901 **email address** p.ditunn@usip.edu

Department Social Sciences

Type of students Occupational Therapy, Health Psychology Majors

Psychology Minors

Course or activity where implemented Cognition PS329 Fall semester 1998 & 1999

Describe goals of innovative educational activity

Provide each student with "hands-on" research experiential learning opportunity. Provide each student with a cooperative research experience to enhance interpersonal skills and collaborative research experience.

Summary of innovation and its implementation

Hands on experiential learning with cognitive research

Each student and partner is required to conduct a pilot research project. This project requires that the partners design a research project, which addresses a cognitive issue: e.g.: perception, attention, memory, memory enhancement, forgetting, imagery, cognitive styles, problem solving, etc. This project must be an original idea, or a modification of existing research. The students will meet with instructor to formulate a research hypothesis, design a methodology, and determine a plan for collecting data (at least 20 subjects). After data collection, students will meet with the instructor to analyze the data. A research manuscript that includes an abstract, introduction, method, results, conclusion and references (as in a journal article) is a course requirement.

Examples from past student research

Sleep deprivation effects on "undo" of automatic tasks
Distracter tasks in learning new information (effects of pictures of unclothed individuals)
Music as an enhancer or interference on retention of new learning
Imagery versus Text as processing styles
Influence of subliminal presentation of affect words on memory
Cognitive mapping (map reading performance)
Context, state, mood dependent learning
Retrospective or Prospective interference on learning

Describe any changes that you have made in its implementation

Will use computer-programmed projects

Reflect on why this innovation continues to work

1. Hands on experience
2. Seems to be working as some projects have been submitted and accepted for presentation at Annual Eastern Psychological Association Meetings.

Describe student reaction to the innovation

"Too much work-however more fun than a written library research paper requirement"

Describe how can this sustained innovation be implemented in other courses.

Use of computer programs as research projects

Other comments

Very time consuming for instructor, as approximately 17 projects a semester are concurrently supervised.

Sustained Innovation

Title of innovation Autobiographical Memory Project

Name of innovator Pat L. Ditunno

Telephone number 215-596-8901 email address p.ditunn@usip.edu

Department Social Sciences

Type of students Occupational Therapy, Health Psychology Majors, Psychology Minors

Course or activity where implemented Memory, Fall, 1997, Cognition PS 329 Fall semester 1998 & 1999

Describe goals of innovative educational activity

Provide each student with practical application of theoretical knowledge. Provide each student with a personalized experience as a subject in self-report data collection.

Summaries of innovation and its implementation

Students keep a memory diary for 5 weeks and after a 2nd week interval are tested on their recognition and recall.

1. Each day, the students must write descriptions of two unique personal events in their diaries
2. Next to each description students rate its memorability using a 5 point Likkert Scale:
3. If a student forgets to write an event description for a particular day, then (s) he should write, "forgot" across the page. (do not enter an event for previous day on a later day)
4. At a two-week interval after completion of the journal, an individualized memory test is given to each student and the data are recorded
5. Students were required to interpret the class data as a final exam question

Describe any changes that you have made in its implementation

No changes were made.

Reflect on why this innovation continues to work

- Personalized to each student
- Students very cooperative

Describe student reaction to the innovation

"Too much work" Can't believe I forgot to record information so many times

Describe how can this sustained innovation be implemented in other courses

Related specifically to memory and memory distortion therefore specific to cognition - however a journal can be implemented in any course.

What advice would you give to other people adapting this innovation?

Very time consuming for instructor to individualize memory tests.

Sustained Innovation

Title of innovation Data Comparisons

Name of innovator Pat L. Ditunno

Telephone Number 215-596-8901 **email address** p.ditunn@usip.edu

Department Social Sciences **Type of students** Physical Therapy Students

Course or activity where implemented PS354 **Psycho-Social aspects of Disability**

Describe goals of innovative educational activity

Provide each student with an opportunity to examine own belief systems as they may be projected onto patients.

Summary of innovation and its implementation

Early in the semester students take several standardized questionnaires, among them are the "Attitudes toward Disabled Persons Survey", "Locus of Control Surveys" and the "Beck Depression Inventory". Each student scores his/her own and records the data anonymously. During the semester the class scores are interpreted by the students, and compared to published patient data. Later each student takes the same inventory role-playing as a patient, age 24, with a diagnosis of Spinal Cord Injury. Students are then required to interpret the differences in the first set of class scores and the role-playing class scores, as well as published articles on incidence and/or lack of depressive reactions following spinal cord injury.

Reflect on and why this innovation continues to work

Students do well on the mid-term exam questions related to this exercise, therefore it seems that they have read the assigned relevant material. This activity relates personal data to clinical data.

Describe student reaction to the innovation

Students do report that they gain insight into false perceptions about how others should or should not adjust to disability. Students gain insight into similarities and differences at own results.

Describe how can this sustained innovation be implemented in other courses.

This is tailored to this course. Other types of questionnaires can be used and results compared to published articles.

Title of innovation Leadership Development Class, Course List-Serv and Leadership Journal

Names of innovators Len Farber and Melanie Rago

Telephone Number 215-895-1192 and 215-895-1121 email addresses

l.farber@usip.edu and m.rago@usip.edu

Department Student Life

Type of Students Student Leaders and Students desiring to learn about leadership (Leadership Development Course, SS 202)

Describe goals and innovative educational activity:

Leadership List-Serv:

An on-line discussion group in which participants are able to send comments for information or to pose questions to the class. The questions/comments must pertain to the key components (behaviors and characteristics) they are learning.

1. Opportunity to reflect on materials gained in class
2. Opportunity for peers to offer feedback
3. Opportunity for instructors to gauge learning and offering insight to class
4. Opportunity to understand technology and how it relates to leadership and citizenship

Leadership Journal:

An electronic journal relating to topics discussed in class to situations the student are experiencing. The students note how they utilized the knowledge gained in class. Explaining why they were successful or not. How they might approach a similar situation differently if they did not receive a positive outcome. The entries are sent weekly to the instructors and instructors return feedback to the students.

1. Opportunity to reflect on material gained in class
2. Opportunity to reflect on changes in behavior as it relates to leadership
3. Understanding of characteristics that are being learned and developed
4. Opportunity for self-assessment

Reflect on what's working and why it is working

Leadership List-Serv: It offers students the opportunity to give feedback to their peers and for students who feel intimidated in class to open up. Also our students today like this type of assignments since they are used to the technology

Leadership Journal: It works since students keep a track of their journal entries. They can see the progress they are making as they experience and practice different components of leadership (communication skills, group dynamics, goal setting, presentation skills, etc)

Describe student reaction to the innovation

Students have remarked how they were able to open up in their journal or list serv entries. At the end of the course they have remarked that they didn't even realize the material they were gaining until they read all their journal entries.

Will innovation be sustained within the course? Yes

Title of innovation A Collaborative Cardiopulmonary Assignment Between USP and the University of South Australia

Name of innovator Robert Feldman

Telephone Number 215-596-8723 email address r.feldma@usip.edu

Department Physical Therapy Type of students Fifth Year

Course or activity where implemented PT 611 Cardiopulmonary

Describe goals of innovative educational activity

1. To enable USP PT students to learn how PT is performed in another country
2. To introduce students to the concept of distance learning

Describe the innovation and its implementation

PT students from USP were paired with PT students from the University of South Australia (UNISA). They were required to review one of five patient scenarios and develop goals and a treatment program. They were also required to examine the patient's health insurance situation, and to choose which country, Australia or the USA, has the best health care system.

Reflect on what's working and why it is working

The students from the two different countries interacting is "what's working." It was probably a combination of faculty cajoling and student interest in talking with another PT from a different country.

Describe student reaction to the innovation

Student reaction was generally quite positive. As they reported, they not only learned a great deal about PT in another country, but also about how the US health care system works.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

My Australian counterpart, Marie Williams, PhD, and I have already tried a similar program in the physical agents course.

Title of Innovation A "hands-on" approach to teaching about survey research.

Name of Innovator Ellen Flannery-Schroeder

Telephone Number 215-596-8517 **email address** e.flanne@usip.edu

Department Social Sciences

Type of students Students with varying majors enrolled in PS 201 - Adolescent Psychology

Course where implemented PS 201 - Adolescent Psychology

Describe goals of innovative educational activity

The goals of this project were the following:

1. to expose students to a variety of methodological and design issues in survey research (e.g., question development, concept operationalism, sampling bias, item analysis, generalizability of research findings, confidentiality and other ethical issues).
2. to promote critical thinking and evaluative skills through the selection of a survey topic and development of survey questions
3. to generate a link between classroom instruction and "real world" applications of course content
4. to heighten students' interest and investment in the course

Describe the innovation and its implementation

Early in the semester, students, working in groups, were required to select a topic from the field of adolescent psychology and develop a survey to gather data on the selected topic. Each group developed one survey over the course of the semester. Topics selected included academic stress, sex education, school violence, and college drug use. Students were provided some class time to work with their groups. Upon completion, the surveys were administered to interested USP students enrolled in introductory psychology classes. Survey participants, with agreement from course instructors, received extra credit for their participation in the survey research. Students analyzed the resulting data and, in the final days of class, presented their survey results to the class.

Reflect on what's working and why it is working

Students were very interested in developing questions that would allow them to explore their area of interest. The group work allowed for a break from the usual lecture format, and students were able to teach and learn from one another. Interest was heightened by the fact that students would be analyzing data from a sample of USP students. Thus, the information was made exceedingly relevant to the student's lives -- it took learning out of the classroom and into their personal lives.

Describe student reaction to the innovation

Students appeared genuinely excited and interested in working on their survey projects, and the resulting group presentations were terrific.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

This innovation could easily be used in other courses to teach about research methodology and design.

What advice would you give to other people adapting this innovation?

Students needed a good degree of guidance in the selection of topics, and more so, in the development of survey items. Students had difficulty in developing operational definitions for terms and in developing items that were clear to all possible survey takers. The instructor should periodically review the surveys and provide feedback to the groups.

Title of Innovation Do you hear what I hear? A psychological analysis of "teen" music.

Name of Innovator Ellen Flannery-Schroeder

Telephone Number 215-596-8517 **email address** e.flanne@usip.edu

Department Social Sciences

Type of students Students with varying majors enrolled in PS 201 - Adolescent Psychology

Course or activity where implemented PS 201 - Adolescent Psychology

Describe goals of innovative educational activity

The goals of this project were the following

1. to use popular "teen" music to illustrate important concepts and principles in the field of adolescent psychology
2. to promote critical thinking and evaluative skills through analysis of song lyrics
3. to generate a link between classroom instruction and "real world" applications of course content
4. to heighten students' interest and investment in the course

Describe the innovation and its implementation

On the first day of class each student was given a blank audiotape on which to record a minimum of one "teen" song that dealt with a topic in adolescent psychology (e.g., puberty, identity, love, friendships, suicide, sex, violence, morality, rebellion, freedom). At the assigned due date (a few weeks into the semester), students turned in the audiotapes labeled with the name of musical artist, song title, and song content (i.e., what the song was about). Throughout the semester as song content overlapped with course content, I played the songs in class. The class then discussed the song in light of the information presented in class. Each song was analyzed via students' use of critical thinking skills to identify major concepts and/or ideas reflected within the songs. In addition, students were asked to identify, evaluate, and discuss possible implications to the listeners of various songs (e.g., songs glorifying suicide, violence, sex).

Reflect on what's working and why it is working

This instructional method appears to work because the course content is made exceedingly relevant to student's lives -- it takes learning out of the classroom and into their personal lives. The activity is also beneficial because it stimulates learning and critical thinking about course content in between classes (e.g., students listen to music in their bedrooms, dorm rooms, cars and commonly discuss it among friends).

Describe student reaction to the innovation

Students enjoyed listening to "teen" music in class. Many commented that they'd heard some songs a million times but had never before thought about the words or the meaning behind the songs. They were eager to discuss their interpretations and reactions to the music. Often, students would leave the classroom still talking about the music, its lyrics, and its meanings.

Will innovation be sustained within the course? Yes.

However, in the future, I might bring to the classroom some songs from the past (e.g., '40s, '50s, '60s) to include an historical perspective on adolescent psychology.

Will you implement this innovation in other courses? Yes, in a modified form**Describe:**

I may use this technique in other courses where course content overlaps with song content. For example, this instructional technique could also be used in an abnormal psychology class to illustrate popular (and sometimes incorrect) conceptions of mental illness.

What advice would you give to other people adapting this innovation?

My advise to others who may use this technique is to be sure to listen to all songs before playing them in class. Many times students were off-target in terms of identifying exactly what a song was about or, alternatively, missed important themes or concepts that were also illustrative of course content.

Title of innovation Designing Utopias
Name of innovator Paul Halpern
Telephone Number 215-596-8913 **email address** p.halper@usip.edu
Department Mathematics, Physics, Computer Sciences & Statistics
Type of students All type
Course or activity where implemented Intellectual Heritage

Describe goals of innovative educational activity

To help students interactively experience the construction and implementation of a possible future society.

Describe the innovation and its implementation

Students form groups, choose a theme, and design a utopian or dystopian society. They consider various aspects of the society, including family life, education, government and the economy. They present a 15-20 minute vision of life in their society, either live or on video, then answer questions about it.

Reflect on what's working and why it is working

I feel that offering students opportunities to be creative and interactive helps them picture the subject (the idea of progress and utopias) in a more tangible manner.

Describe student reaction to the innovation

Students, in general, did an excellent job envisioning possible societies. They seemed enthusiastic about the innovation. The societies they designed were quite imaginative.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

What advice would you give to other people adapting this innovation?

Be sure to offer clear guidelines for the project, and check on students' progress throughout the semester.

Title of innovation Weaving Service Learning in Foundational Occupational Therapy Courses

Name of Innovator Roger I. Ideishi, Susan E. Santalucia, Gina F. Collier, Pam J. Kearney

Telephone Number: 215-596-8499 email address r.ideish@usip.edu

Department Occupational Therapy

Type of students: Occupational Therapy

Course or activity where implemented: OT 360, OT 382, OT 452

Describe goals of innovative educational activity

The goal of this innovation is to infuse service-learning experiences as a tool for achieving the course objectives.

Describe innovation and its implementation

During the 3rd year occupational therapy curriculum, the students are introduced to foundational concepts of human occupation, participation in a health service profession and the human service experience. Students enroll in OT 360: Clinical Teaching Skills; OT 382: Community Fieldwork; and OT 452: Concepts in Human Occupation. Some of the major course objectives for these course are to understand how habits and social roles influence human performance, to understand the meaning and dynamics of human activity and occupation, to understand the impact of development, culture, age and society on the teaching and learning process, to understand the relationship between human function, activities, social participation, and contextual environments, and to appreciate the differing perceptions of quality of life, well being and human occupation. These concepts are rather complex course objectives for students to solely ingest during a lecture or classroom experience. Service and experiential based learning brings a real demand context to the student's learning. Students participate in various service and experiential based learning that includes rotations at Habitat for Humanity, and developing, creating and implementing educational and promotional material and activity programs for community and clinical settings in the Philadelphia area. A pre- and post- survey and narrative journaling/electronic discussion board postings were implemented to explore the students reflection and change during the process.

Reflect on what's working and why it is working

Students have a personal point of reference to understand and experience the course objectives. This real demand reinforcement enhances the on-campus classroom and laboratory experience.

Describe student reaction to the innovation

Many students are not familiar with service learning as course tool. Students respond positively to the "real" experience as "real" learning. The surveys and journaling/discussion board postings reveal subtle yet significant changes in the student's perception of the profession and the role of health professionals in society.

Will innovation be sustained within the course? Yes

This innovation has been used for the past 3 years in all of the mentioned courses and expects to continue this method in the future.

Sustained Innovation

Title of Innovation Student Developed Portfolios and Grading by Contract

Name of Innovator Z. Annette Iglarsh

Telephone Number 215-596-8493 **email address** a.iglarsh@usip.edu

Type of Students 5th year MPT Students Physical Therapy

Course or activity where implemented PT 667 Leadership,
Administration and Administration

Describe goals of innovative educational activity

1. Establish students' own grade goals and thus internalize their motivation to achieve these goals
2. Guide the students to develop a product that would assist them when seeking employment upon graduation
3. Provide opportunities for the students to create activities that would enhance their resumes
4. Provide opportunities and guide the students in preparation of professional level presentations

Describe the innovation and its implementation

The course is a capstone to the Physical Therapy Program and requires students to self-evaluate, peer evaluate and prepare a professional portfolio. They can volunteer to participate in a class administrated health fair, prepare a poster presentation and present in-service type lectures to their classmates or the community. The portfolio distinguishes the USP graduate from other applicants.

The students select from a variety of projects for their portfolio. The projects are graded only if they meet standards, consistent with the expectations of a newly graduate therapist in the clinic. The number of projects is pre-selected by the students, which translates into their final grade for the course. Peer and professor feedback is given to the in-class presentation and small-group portfolio reviews.

Describe any changes that you have made in its implementation

The course was reconfigured to span two semesters. This was a response to student input requesting an extension of the time available for project development. The initial information session was expanded and additional in class time was implemented throughout the semester to discuss portfolio projects as developed.

Reflect on why this innovation continues to work

This course enables students to:

1. reflect on their prior work in the entire Physical Therapy Program
2. identify areas of future professional interest
3. provide a possible advantage when seeking employment
4. be responsible for the level of work that they accomplish in the course
5. function as adult learners

Describe student reaction to the innovation

Since this was the second year of the project, the students had a better idea of what was expected. This awareness and the reconfiguration of the class over two semesters resulted in decreased student anxiety. Students were more realistic when selecting grades and identifying projects. There were more students venturing out to the community to present their in-services to get patient or professional feedback. Fewer students questioned the value of the portfolio project.

Describe how can this sustained innovation be implemented in other courses

The upper class students in other academic programs at USP could benefit from the portfolio experience. While combining the portfolio experience with self-determined grading promotes more of an adult learning environment, it may not be appropriate for all classroom experiences.

What advice would you give to other people adapting this innovation?

Carefully explain the mechanics of the entire project and expectations to the students at the beginning of the course. Identify additional question and answer sessions in the syllabus throughout the semester. The lead professor must be very accessible to guide the students through their project and update other faculty members in the program on the course requirements because students may seek their help during the semester.

Are you aware of any other USP faculty who are adopting this innovation?

Yes

If yes, how, are they using it?

Other faculty members are using portfolios in their programs and classes throughout the campus. They have adapted the project to their discipline by encouraging research proposals and abstracts.

Title of innovation Use of WebStudy for an On-line Clinical Reasoning Course

Name of innovator Pamalyn Kearney

Telephone number 215-596-8493 email address p.kearne@usip.edu

Department Occupational Therapy

Type of students 5th year, entry-level master degree

Course or activity where implemented OT 679: Clinical reasoning II

Describe goals of innovative educational activity

The goal of using WebStudy was to create an interactive, meaningful environment where the students could develop their clinical judgment skills, reflect upon their clinical practice (both currently while on fieldwork and in the future), incorporate didactic learning into their developing clinical practice, problem solve difficult issues, and offer both emotional and practical support to each other. WebStudy was chosen as the medium to deliver this course because it offers a more dynamic environment for asynchronous course delivery than other available mediums.

Describe the innovation and its implementation

WebStudy is a platform for course delivery that is currently being used at USIP. OT 679 is a new course that was designed for distance delivery to meet the needs of the students who are concurrently involved in their Level II Fieldwork experiences at a variety of settings across the country.

Reflect on what's working and why it is working

I believe that using WebStudy worked for this course because it provided a dynamic environment for students to seek information and share resources/knowledge with peers. The instructor was able to initiate discussion in the forum and refocus discussion when necessary to analyze and explore topics from the readings or from student experiences. Students were able to actively participate in the course discussion while also having the opportunity to reflect on what they were 'saying' before actually posting their comments to the forum.

Describe student reaction to the innovation

Students initially report some difficulty with learning a new system (WebStudy) however by the end of the course most students (over 90%) reported satisfaction with the course and recommended continued use of WebStudy for distance courses.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes
Describe

The OT department is currently offering a course that meets for classes on a regular basis with some classes and lab experiences being delivered via WebStudy. This group of students will be going out for fieldwork experiences in the fall with some familiarity with WebStudy. During the fall, 2001 semester, the OT department will be offering two elective courses for the 5th year students via WebStudy.

What advice would you make to others adopting this innovation?

Take time to learn how to use WebStudy both as a faculty member and as a student.

Allow plenty of time to prepare the course and to deliver the course – distance courses typically require more time (especially initially) than traditional courses.

Remember that it will take the students a few weeks to learn how to use WebStudy – you will want to schedule your course timeline accordingly.

Don't get caught up in the students' technical difficulties – guide them in problem solving on their own or direct them to the support team.

Consider the hardware and software that students will be using to access the course when designing learning activities, especially if there are a lot of graphics involved.

Title of innovation Collaborative Course Assignments

Name of innovator Pamalyn Kearney, Susan Santalucia, Suzanne Trump

Telephone number 215-596-8493 email address p.kearne@usip.edu

Department Occupational Therapy

Type of students Fourth Year OT Students

Course or activity where implemented OT 448: Rehabilitation Interventions, OT 479: Clinical Reasoning, OT 488: Group Process

Describe goals of innovative educational activity

1. Facilitate the integration of material learned in the three courses
2. Build skills of cooperation, collaboration and self-reflection
3. Gain experience with group process

Describe the innovation and its implementation

The students are given a complex case study to analyze from several perspectives that relate to OT 448 and OT 479. With the case study they are given several questions that they need to answer for one or the other course. They work in small groups to complete this project. For OT 448 each student writes an individual paper that explores the group process that occurred while completing the case study project. This paper links the student's own experience with the didactic information they are learning about group process and using groups therapeutically.

Reflect on what's working and why it is working

The collaborative assignment does seem to help the students to integrate the information from several courses that they have taken prior to and during the semester of the project. They spend several weeks on the case study and are expected to seek out information in order to answer the assigned questions. Having the students work on one in depth case study for both OT 448 and OT 479 allows them to devote more time to really understanding the case, time that would be split up if the students were working on a similar case for each course.

Describe student reaction to the innovation

Students seem to recognize the learning that occurs during the overall process, as demonstrated by comments written in their OT 488 papers. They also appreciate having several assignments that revolve around the same group rather than three separate assignments with three separate groups. This improves their ability to manage their time and meet their group obligations.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

What recommendations would you make to others adopting this innovation?

Take care to develop cases that are similar in complexity.

Consider how you will assign groups and the implications of that (randomly, self choose, mix stronger and weaker students, etc)

Collaborate with other faculty – they may be able to add a piece to the assignment that is of great value

Sustained Innovation

Title of innovation Graphing Calculators in Mathematics

Name of innovator Amy Kimchuk

Telephone Number 215-596-8705 **email address** a.kimchu@usip.edu

Department Mathematics, Physics, Computer Science & Statistics

Type of students Freshman

Course or activity where implemented: MA101 - 102

Describe goals of innovative educational activity

Students are taught how to do the math by hand first, and then I enhance their understanding of mathematical concepts with the graphing calculator. They are taught how to use the calculator as a tool in assisting their analysis of problems. The introduction of the graphing calculator has allowed me to teach other concepts, such as modeling “real world” data, correlation, programming, and discussing graphs, charts, and tables in more depth. With the graphing calculator, students are able to graph complex functions that otherwise would never be seen in a freshman course. This has generated excitement among students otherwise uninterested in a math course.

Reflect on what's working and why it is working

What continues to work with the graphing calculator is the visualization of mathematics. Without the calculator, math is a series of steps on how to solve. With the calculator, I am able to get away from a lecture format and more involved in hands-on learning activities.

Describe student reaction to the innovation

The calculator has allowed students to take charge of their learning process. They agree that it should only be used as a tool and that it is important to do math both by hand and with the calculator. They understand that by not knowing “how” to do the math, the calculator cannot provide much assistance.

Describe how can this sustained innovation be implemented in other courses

Any course that requires students to collect and model data would be able to implement the use of the calculator. The calculator is also a useful tool in graphing and analyzing functions.

What advice would you give to other people adapting this innovation?

My advice is to learn the graphing calculator before trying to use it for an activity. Have patience, and remember that technology in the classroom is not easy. Things sometimes do not always go as planned, so don't panic. Anyone interested in learning more about the graphing calculator and its uses can contact me.

Are you aware of any other USP faculty who are adopting or adapting this innovation?

All mathematics instructors are now teaching the freshman math courses with the graphing calculator. The Physics department will be using graphing calculators in Fall 2001.

Sustained Innovation

Title of innovation Mathematics Research Paper

Name of innovator Amy Kimchuk

Telephone Number 215-596-8705 email address a.kimchu@usip.edu

Department: Mathematics, Physics, Computer Science & Statistics

Course or activity where implemented MA102

Describe goals of innovative educational activity

The purpose of this paper is for students to answer the question as to why mathematics is important in their particular field. The paper is designed for freshman to examine their major closely and to find out how important mathematics is to their major. I also implement the paper to get students interested in learning mathematics, by researching mathematical concepts they will see in the future. A 5-page paper is assigned in the beginning of the second semester. This paper is to include an abstract and a bibliography. Students must look for applicable examples of mathematics in their chosen fields, and must show the examples in mathematical symbols. They must also explain the importance of the concept as it relates to their major.

Reflect on why this innovation continues to work

This paper is working because it makes freshman examine their major and look at future classes they are expected to take. This opens the door of communication because students conduct interviews with instructors, pharmacists, and people they work with to get information for the paper. Not only do students get a chance to examine the mathematics involved in their discipline, but also they learn more about their chosen career.

Describe student reaction to the innovation

Student reaction is a positive one. Most students groan when they first hear about a paper assigned in a math class. But after they start the research, and complete the paper, they realize that there is more to mathematics than just a subject they are required to take in college. The important thing is that they no longer question why they have to take mathematics.

Describe how can this sustained innovation be implemented in other courses

Any instructor who has students questioning “why” can use this assignment. It does not have to be as in depth as a research paper, but a short writing assignment as to why the student thinks this class is needed.

What advice would you give to other people adapting this innovation?

I have learned the importance of checking sources, specifically web pages. Plagiarism is a major problem, so you should also keep copies of writing assignments to verify students do their own work.

Are you aware of any other USP faculty who are adopting or adapting this innovation?

I am not aware of any other assignment like mine. I know that research papers are assigned, but I do not know of any instructor who makes students write about a subject and how it relates to their major.

Sustained Innovation

Title of Innovation Interteach

Name of Innovator Joseph V. Lambert

Telephone Number 215-596-8588 email address j. lamber@usip.edu

Department Social Sciences Types of students: Undergraduates

Courses where implemented PS 101, PS 210, PS 327, SS 220

Describe goals of innovative educational activity

Interteach is based on the following notions:

1. One of the best ways to learn something is to teach it.
2. What you know is what you can do
3. Learning is “doing”
4. What you learn in a college course, is what you can do afterward, that you could not do before
5. All students can do as the best students do:
 - They study regularly, not just before exams
 - They study actively, organizing, comparing, and contrasting
 - They participate actively in class

The goal in my courses is to get students to speak sensibly about basic facts and concepts.

Describe the innovation and its implementation:

An “interteach” is like a conversation between two or more people. The conversation is about questions (made up by the instructor), concepts, and issues covering important topics from a particular portion of a textbook.

Prior to class, students try to find answers to these provided questions as they are reading the material and to formulate their answers in writing. They are then encouraged to know these answers well enough to teach them without notes.

On an Interteach day—there are about six of them during the semester—they break into groups of two or three and everyone takes turns teaching the others for about 30 min. I give a “probe,” a quiz, based on one of the then questions, or a combination of one or two questions, or definitions.

They are graded on a 10-point scale. Ten percent of their final grade is based on materials just taught during interteach. Students also get bonus points if they and the other person(s) in their group score “B” or better. Thus, there is an incentive

for effective interteaching—for self and others. Twenty percent of their final grade is based on probe performance.

Ten percent on simply participating in the interteach activities. So, a total of 30% of the final grade comes from interteaching.

As a member of the Arts and Sciences Advisory Committee, I learned from leaders in businesses and industries that two of the most important skills sought by employers are communication and ability to work in a team. Besides giving my students opportunities to acquire these skills, interteach also serves to help them learn course-specific materials.

Reflect on why the innovation continues to work

Students like the idea that their quizzes will be limited to a circumscribed portion of reading materials. Their complaints (as reflected in course evaluations) are limited to the fact that they have to keep up with the readings. However, they recognize that in the long-term this technique actually reduced study time. “Grade inflation” was evident when I began using the technique. But, they know the material

Describe how this sustained innovation can be implemented in other courses

My advice is try new strategies that involve student interaction. They seem to enjoy these activities. Combine intertech with lectures, live demonstrations and appropriate videos for a varied format.

Will you implement this innovation in other courses? Yes

Title of innovation "Web-based Information and Testing for Eudora Light™ Electronic Mail and Campus Computing Policy"

Name of innovator Jeanette McVeigh

Telephone Number 215-895-1197 email address j.mcveig@usip.edu

Department Information Science Type of students Transfer and students returning after withdrawal.

Course or activity where implemented this activity is implemented outside of the Introduction to Computer Applications courses.

Describe goals of innovative educational activity

The Information Science faculty taught single session classes about the campus network, the basics of Eudora Light and the Campus Policy for Responsible Computing to students, who tested out of or were not required to take the Introduction to Computer Applications course. These students already had a full class schedule and frequently worked. Arranging these single session classes to fit all students' schedules was impossible.

Since I coordinated these classes, my goal was to provide the informational content to the students in a way that allowed more flexibility for the students and also assured that the content was read and understood.

Describe the innovation and its implementation

I turned to the Web and its 24 x 7 availability as a means to solve the scheduling problem. I created in HTML format a FAQ covering the basics of the campus computer network and basic features of Eudora Light. I also converted to HTML format the sections of the Campus Policy on Responsible Computing, which the students were required to read in the one-hour sessions. Both of these were uploaded to the University's web page. To test the students on the content, I created an online test using CyberExam online testing application.

After preliminary testing in August 1999, the reading material and test were ready for student use on September 13, 1999. To date, about 80 students have taken the test based on the online readings.

Reflect on what's working and why it is working

When this material was taught in the classroom setting the Instructor had to cover the campus network, Eudora Light basics and allow 5 minutes for the students to read the "Responsible Computing Policy." While the Instructor did ask questions, time constraints prohibited querying all students. Using web-based readings and testing, which requires the students to read the material to pass, there is somewhat more assurance that every student has read the information.

Students can take the exam any number of times to pass. CyberExam has a feature that allows randomization of test sections, test questions and test answers, so that the test appears to be different each time. Cyberexam immediately reports his or her score to the student.

Describe student reaction to the innovation

Student reaction is very positive. They like the flexibility. They have full class schedules and many of them work, so fitting in an additional class session was very difficult. Although they still must sign a form requesting that their e-mail accounts be activated, the students can read the material and take the test from any location, at any time.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Other comments

Based upon the data from the report from Cyberexam, I am currently revising the reading material and questions for the fall semester.

Title of innovation Gaining Immediate Feedback on How Well Students are Learning through ungraded multiple-choice questions

Name of innovator Diane W. Morel

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Department Pharmaceutical Sciences Type of students 3rd year (Pharm D, Pharm/Tox)

Course or activity where implemented PC 301 (Physiology I)

Describe goals of innovative educational activity

1. engage students in self evaluation of learning
2. get feedback of what and to what level of detail learning was being done
3. give students practice with higher levels multiple choice questions
4. enhance student learning and self confidence

Describe the innovation and its implementation

Weekly, students anonymously write answers to 4-6 multiple-choice questions geared toward integration and critical thinking. After handing in their answers, questions and answers were reviewed. On the next day, results from answers handed in were presented, and problem areas were reviewed with the class.

Reflect on what's working and why it is working

Method enhances two-way communication between instructor and students in a large lecture room. It also reinforces the concept of continued development of knowledge base and integration of that knowledge for application.

Describe student reaction to the innovation

Students' reactions were generally positive, and the extra practice and reinforcement seemed to promote better performances on exams for at least a subset of the group.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

It is a useful tool for a large lecture section. I would look to use something similar for Pharmacology, a 4th year class for Pharm D and Pharm/Tox students.

What advice would you give to other people adapting this innovation?

It is important to have students write an answer down, as the feedback gained is quite different than that from a show of hands. You may also have to eliminate some material for the sake of time (you will probably lose one full lecture for each 3-4 weeks you implement the weekly quiz).

Sustained Innovation

Title of innovation Problem-Based Learning Activities in a Kinesiology Course

Name of innovator Peter Miller

Telephone Number 215-596-8542 email address p.miller@usip.edu

Department Physical Therapy Type of students 3rd year MPT

Course or activity where implemented PT 571 - Kinesiology

Describe goals of innovative educational activity

1. Provision of opportunities for self-directed learning
2. Development of professional behaviors: collaboration, communication, goal-directed group work
3. Development of higher levels of learning for students

Describe the innovation and its implementation

Several critical areas of learning in the Kinesiology course were not taught by lecture method but instead were embedded within patient case problems, which were given to students to work on in groups (randomly assigned) over the course of a semester (5-6 cases per semester). Students were responsible for writing case reports that demonstrated understanding of the new areas of learning and presenting them in class.

Describe any changes that you have made in its implementation?

Transitioned from individuals in the groups writing their own papers to one group paper.

Reflect on why this innovation continues to work

Students have largely demonstrated the ability to learn critical course content independently in groups and demonstrate that knowledge in written and verbal form, as well as on course exams. In addition, some students have demonstrated the desire and ability to learn the material at a higher level (at the analytical and synthetic cognitive objective level) than could be expected if the entire course was teacher-driven. It requires active learning in a relevant context (real case problems)

Describe student reaction to the innovation

They feel the learning is meaningful, but have reservations about some aspects of the peer assessment attached to the projects.

Describe how can this sustained innovation be implemented in other courses?

It can easily be implemented in other courses. The key component is random assignment to groups.

What advice would you give to other people adapting this innovation?

This takes a lot more work than more traditional approaches to teaching-learning.

Are you aware of any other USP faculty who are adopting or adapting this innovation?

No

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

This course design has been used as a model for a course (Clinical Simulations) that is entirely based on case problems and small group work. This course serves as the capstone for the curriculum.

Title of innovation The Development of Peer and Self-Assessment in the Classroom

Name of innovator Peter Miller

Telephone Number 215-596-8542 **email address** p.miller@usip.edu

Department Physical Therapy **Type of students** 5th Year MPT

Course or activity where implemented PT 673 – Clinical Simulations

Describe goals of innovative educational activity

The goal of this activity was to develop a peer and self-assessment instrument that:

1. discriminates among levels of performance
2. provides varied modes of feedback (quantitative and qualitative) for the learner

Describe the innovation and its implementation

This capstone course is designed in a problem-based learning format, where students are randomly assigned into groups of 5 or 6, and assigned complex real-life case problems that they must work on and then present to the class. Assessment is based on a triangulated approach, with faculty, peers, and the group members all assessing the quality of the presentations.

In spring 2000, the course used an assessment instrument that was derived from instruments used in evaluation of oral presentations. There were five criteria, each graded on a 0-4 scale for a total maximum score of 20 points. There was also space for assessors to comment on each of the grading areas. When the assessment data was analyzed, I found out that the peer and self-assessment scores tended to concentrate in a very narrow range, at the high end of the scale. The major problem that arises from these scoring tendencies is that students are not discriminating among different levels of performance, which seriously diminishes the value of peer and self-assessment as a meaningful source of performance feedback.

I considered various alternatives to the form for spring 2001. I chose to increase the number of scoring criteria (maintaining the same 0-4 scale for each item). I developed a new assessment instrument with 25 items (for a total possible score of 100). The assessment form also allowed for written feedback.

Reflect on what's working and why it is working

With the new assessment used in spring 2001, there was less of a tendency for range restriction and scoring leniency. The newer assessment system allows for greater discrimination of student performance, which makes the information more

meaningful to students to judge their learning, especially in the reflection on their strengths and weaknesses.

In addition, the newer system is more valid than the previous system for faculty who would want to use the quantitative data for grading purposes.

I had also hoped that the new assessment system, with its very detailed criteria, would stimulate a deeper level of reflection by the peer assessors when providing written feedback. However, I found that a greater percentage of peer assessors provided written feedback in spring 2000, and that those assessors provided more feedback statements per assessment than in spring 2001. The reason for this difference may be that on the spring 2000 form, written feedback is requested for each of the five items, preceded by a question. The presence of a question may have served as an effective stimulus to offer feedback in the form of a response to the question. On the spring 2001 assessment form, written feedback is only asked for at the end of the form, with no specific topics to address. The addition of more scoring criteria may not have been enough to provoke more written feedback. However, there were a greater percentage of negative comments and a lesser percentage of positive comments in spring 2001 than in spring 2000, and this appears to correlate well with the quantitative evidence of more discriminatory scoring in spring 2001.

Describe student reaction to the innovation

Students varied in terms of what they valued in peer assessment. Some students were very interested in the quantitative feedback and in the relative strengths and weaknesses of different parts of their own presentation. Some students valued the qualitative feedback very highly, and discussed the comments with their fellow group members.

Will innovation be sustained within the course?

Yes. Next year I will revise the assessment instrument to try to maximize its quantitative and qualitative value by eliminating items that did not demonstrate scoring sensitivity, and also by returning directed feedback questions to the form.

Will you implement this innovation in other courses?

I am incorporating some of the lessons learned from this activity into the peer/self/assessment system that I use in PT 571-Kinesiology.

What advice would you give to other people adapting this innovation?

If a peer/self assessment system is to be valid, then it must be able to discriminate performance, and it may take a few revisions of the instrument to achieve that level of validity as an assessment.

Title of innovation Use of electronic reserve (ERes) for all course material

Name of innovator Clyde Ofner

Telephone Number 215-596-8881 **email address** c.ofner@usip.edu

Department Pharm. Sci **Type of students** 4th yr pharmacy

Course or activity where implemented PH 306

Describe goals of innovative educational activity

1. Provide virtually all course material to students at one time
2. Make it accessible by the Internet, i.e. from virtually anywhere at anytime.
3. Reduce instructor work load for preparation of large class
4. Reduce student inconsistencies in their notes

Describe the innovation and its implementation

Material posted: my lecture notes, topic outlines, handout figures and tables, homework problem sets, homework solution sets, back exams, and even a few Internet links to related topics. This required about one summer to place material into text, scan figures and other items, place into computer files, and upload onto ERes. This is for my 7-week section of a required course with 3 lecture and 1-recitation hours per week given each fall and spring semester

Reflect on what's working and why it is working

Access is very good if students have the same or more recent version of Word that I used, and if they are computer literate. Students annotate print outs of my notes rather than take complete (or incomplete) notes of their own. I still make some hard copy handouts; about 1/3 of the amount for the full class. I believe this is an improvement for student learning compared to my previous traditional approach. My exam average scores are about 5 percentage points higher (from about 77 to 82). One disadvantage (I think) is a reduced student attendance in lecture.

Describe student reaction to the innovation

Very positive reaction from individual comments to comments on student evaluations. Students particularly liked the notes and the back exams. A recent request was to have the exam answers posted separately from the exam.

Will innovation be sustained within the course? Yes absolutely

Will you implement this innovation in other courses? Yes maybe

Describe – If I get the time.

Title of innovation Changes to the Laboratory Component of the Human Disorders and Pharmacotherapeutics Course

Name of innovator Cathy Y. Poon

Telephone Number 215-596-8889 email address c.poon@usip.edu

Department Pharmacy Practice and Administration Type of students Doctor of Pharmacy

Course or activity where implemented PP555-6

Describe goals of innovative educational activity

The goal was not to change the overall course. Instead, changes were made in the following areas: student assessment of knowledge, skills and professionalism; comprehensive scheduling; utilization of technology to stimulate “real practice” scenarios; and incorporate immediate feedback to students.

Describe the innovation and its implementation

An example of an interactive activity, which incorporated all the aforementioned changes:

Skills: Use of institutional antibiogram, assessment of patient specific clinical condition, evaluation of patient specific antimicrobial results, use of biomedical literature and communication with health care providers

Description: This topic is covered over several weeks of laboratory activities. First, the students work as a group to review basic antimicrobial coverage. Questions on microbiology and antimicrobials of choice are displayed using ComWeb™. Each group of students records their team’s answers and submits them for evaluation. The following week, the same questions are incorporated into a self-assessment examination using CyberExam™. The examinations are submitted electronically and evaluated immediately by the program so that the students will receive immediate feedback on their performance. More importantly, it is the goal that the students learn from their mistakes. Additionally, several exercises are completed by students to develop their skills on how to utilize antibiograms and other biomedical resources. Combining knowledge and skills acquired previously, pairs of students are expected to treat 3 simulated patients during the third week. The patients’ clinical presentation and laboratory results are presented sequentially and electronically. Upon successful completion of each part, the student can access the next part. Students are expected to assess the patient’s condition, determine a potential diagnosis, and recommend an empiric antimicrobial therapy using a given antibiogram. Part II includes an update of the patient’s clinical condition and laboratory results, specifically microbiologic findings. Based on the update, students are expected to identify the most likely microorganism responsible for the infection and recommend any changes of empiric therapy. The last part of the patient case includes further clinical changes and laboratory findings. Depending on the students’ initial empiric therapy and the patient’s new findings, therapeutic interventions may be necessary.

This activity is repeated again 4 months later with a different set of infectious diseases. Additionally, drug dosing in renally impaired patients is incorporated into the second round of exercises.

Reflect on what's working and why it is working

In the past, the use of antibiograms was an isolated exercise. Entire patient cases were presented on paper that revealed a patient's progression. This allowed the students to alter their therapeutic regimens based on final microbiologic results and clinical condition. By using the sequential method, students develop a better understanding on what actually occurs in practice. They will have to think prospectively in developing a treatment plan for a given patient. With the assistance of the laboratory instructors, students receive two-on-one interaction and immediate feedback regarding their thought process. With the ability to randomly change the findings of parts II and III, the students cannot rely on their classmates' answer or a textbook response. Emphasis is placed on problem solving and development of a therapeutic plan rather than the absolute correct answer. Additionally, students are expected to communicate or recommend their therapeutic interventions with a health care provider.

Describe student reaction to the innovation

Sixth year students who are participating in the laboratory course as part of a teaching rotation find the activities to be helpful in preparing the students for clinical clerkship. The current fifth year students, find the repetition of activities and skills to be helpful and reassuring. I think the best method to assess the outcomes of this course will be during next year, when the students are required to use these skills during their clinical clerkship experience.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

I plan to use the same format to create patient cases and use available technology to allow students to follow a patient's progression and make therapeutic changes as needed. This method also challenges students to think on their feet.

What advice would you give to other people adapting this innovation?

Knowledge of software programs and the various technologies available is imperative for the success of this type of activity, especially to a large group of students.

Sustained Innovation

Description of Innovation Assignment that combines journal research, knowledge of probability concepts, and test question construction

Title of Innovation Project 2: Probability and Research Articles

Name of Innovator Barbara Bendl Reilly

Telephone Number 215-895-1120 email address b.reilly@usip.edu

Department Mathematics, Physics, Computer Science, & Statistics

Type of students 3rd year students

Course or activity where implemented ST310: Biostatistics

Describe goals of innovative educational activity

1. to highlight the connection between probability theory and research in the client disciplines
2. to remind students of the difference between memorizing a probability definition or calculation rule and demonstrating understanding by applying it correctly
3. to remind students that data can be presented in various forms – charts, tables, paragraphs, etc. – and that these may be interchangeable
4. to encourage students to be critical readers of research articles
5. to highlight the difficulty of writing good test questions

Describe the original innovation and its implementation

The assignment is for students to find an article that involves health-related research and that gives data that can be put into table form and used to pose probability questions. They must hand in a brief description of the research to introduce the data, the data itself in table form, 5 probability questions and answers based on the table, a copy of the source article, and the bibliographic reference. Students are familiar with the format because I use a similar format for class examples and test items. As an extra incentive students are told that, in addition to the project grade, some questions from these projects will be used on the final exam that semester.

Describe any changes that you have made in its implementation

No changes have been made at this time

Reflect on why this innovation continues to work

This project forces students to read research articles with a different perspective. They have to really concentrate on the specific numerical information that is given. Is it complete? Is it understandable? Can it be put into a table where the rows and columns add up properly? This gives them another way to really evaluate the reported research. It reminds them that there is a lot of

shoddy statistical analysis out there (or, at least, shoddy reporting of statistical analysis) and gives them some additional points to check when they are reporting on their own research and statistical results. This whole procedure seems to draw them into the research rather than allowing them to remain at a distance as a superficial reader. For the most part this is not an especially time-consuming project – students will generally only have to read a few articles to find one that they can use – and yet completing it successfully also demonstrates a real understanding of the underlying probability concepts.

Describe student reaction to the innovation

Students seem to like this project. Again, it is not especially time consuming. Successful completion of the project is a way to enhance their course grade. The lure of possibly having their own question on the final exam, which presumably would give them an advantage, is also a plus for this project in the students' eyes. With this second implementation, the students were especially creative in writing questions that were non-routine and involved probability concepts from other categories.

Describe how this sustained innovation can be implemented in other courses

At this time, I don't really teach any other courses where this particular innovation would be as appropriate as it is here but, for Biostatistics, I am building up a nice inventory of real world class examples and test items. It seems likely that this approach could be applied to other courses in the beginning professional training years, where students are learning basic concepts but would be interested in applying those concepts to a specific professional discipline.

Sustained Innovation

Title of Innovation Correlation and Regression Project

Name of Innovator Barbara Bendl Reilly

Telephone Number 215-895-1120 **email address** b.reilly@usip.edu

Department Mathematics, Physics, Computer Science, & Statistics

Type of students 3rd year students

Course or activity where implemented ST310: Biostatistics

Describe goals of innovative educational activity

1. to promote the use of computers and Excel in statistical evaluation
2. to reinforce concepts that are dealt with only briefly in class
3. to promote critical analysis of data and statistical results
4. to promote clear scientific writing
5. to provide a non-test activity that is included in the course grade

Describe the original innovation and its implementation

Students are given a large data set in Excel format which includes several different variables. They are given individualized instructions (based on their student ID number, with modifications, if necessary, to avoid duplicates) for selecting a smaller sample of data to analyze. They are also given detailed questions to answer that involve some freedom of choice of variable, the use of descriptive statistics, presentation of information in chart or graph form, correlations, and regression analysis. Once they have answered the questions for themselves, they are required to organize their answers into a well-written report, with critical analysis of their results and some general conclusions about the statistical procedures they employed. This report is handed in, along with all relevant charts and graphs. I am available to them as a computer and statistical consultant to guide them along the way and help them over minor glitches.

Describe any changes that you have made in its implementation

A different large data set for 100 subjects in Excel format was used for the new implementation. Then random samples of 25 subjects were generated in Excel by the instructor and assigned to the individual students so that the students would not have to learn this procedure, which they would probably never use again. The students then could proceed directly to analyzing their sample.

Reflect on why this innovation continues to work

Forcing them to actually work with their own sample creates an opportunity for them to delve into and understand some statistical procedures that we don't spend a lot of time talking about in class. It also brings home the point that sometimes you don't get very "good" results with real data but that you have to

report what you find anyway. This was especially true with the new data set because the variables were familiar to the students and sometimes the results they got for their samples were not what they were expecting. In their analysis they had to account for these “contradictions” to establish notions and this made them reflect on the nature of statistical analysis itself. The fact that all the samples are individualized means that they can consult among themselves in general about the concepts but they must do their own work in the end and write the report of their unique findings. Also, making this an Excel assignment gives them an opportunity to revisit a program that they exhibited a proficiency in as part of the core curriculum.

Describe student reaction to the innovation

Overall, students like having something besides tests included in their course grade – they have lobbied, successfully, for these projects to be weighted more heavily in their course grade. This makes sense because I have seen an increased amount of learning taking place through the projects. Also, the individualized nature of this project makes it more of a cooperative learning experience – students seem more inclined to help each other when, in the end, everyone must do the same amount of work and no one gets a “free ride”.

Describe how this sustained innovation can be implemented in other courses

Having all students doing the same assignment with individualized data allows students the chance to demonstrate an understanding of the underlying concepts. This technique seems to be transferable to any courses where real data in support of the fundamental concepts is available and accessible to students.

What advice would you give to other people adapting this innovation?

Avoid the grading nightmare by insisting on the inclusion of relevant graphs (charts, etc.) so that the results can be checked visually and the report critiqued based on the visuals. Only if something doesn't seem quite right would you then have to reproduce the exact numerical calculations using the computer.

SUSTAINED INNOVATION

Title of Innovation Farmer Yost Math Lab / Emergency Response Facility Math Lab

Name of Innovator Barbara Bendl Reilly

Telephone Number 215-895-1120 email address b.reilly@usip.edu

Department Mathematics, Physics, Computer Science & Statistics

Type of students 2nd semester freshman

Course or activity where implemented MA102: Math. Analysis II

Describe goals of innovative educational activity

1. to highlight the use of calculus in a non-routine application
2. to promote critical thinking
3. to encourage creative thinking
4. to promote cooperative learning
5. to foster more positive attitudes towards mathematics
6. to promote mathematical writing
7. to highlight the number-crunching utility of a computer algebra system

Describe the original innovation and its implementation

Students in MA102 generally complete four or five mathematics laboratory assignments during the semester. For the most part, these assignments focus on the individual student using proper calculus techniques and a computer algebra system to arrive at the correct solutions to the given problems. The Farmer Yost Math Lab is different in a number of aspects. It is a group lab project – students are required to work in teams of 4 or 5. The problem itself is open-ended in that Farmer Yost's dilemma is described and certain parameters are given but, within those parameters, there are still at least 7 different approaches that could ultimately lead to a "solution" to Farmer Yost's dilemma. The student groups have to decide on an approach, carry it out correctly, analyze the whole thing to make sure that they really have solved the dilemma within the parameters, and then write a comprehensive and clear report of what the group has done and what they conclude. Although some approaches may be more obvious than others, students are encouraged to think creatively, always using correct mathematical procedures, and rewarded for such creative thinking in the lab grade. The clarity and understandability of the group's report is also weighted more heavily than merely getting a correct mathematical answer – creativity and good writing are rewarded here as well.

Describe any changes that you have made in its implementation

Although the Farmer Yost Math Lab worked quite well, a new and different problem was needed for this spring, the Emergency Response Facility Math Lab. Again, students were given an open-ended dilemma with certain set parameters and asked to work in groups to “solve” the dilemma. Their solution was to be written as a report to a committee of city commissioners, in which they were to briefly describe their work and also convince the city commissioners to adopt their solution. Bonus points on the overall semester lab grade were awarded to those groups who both used mathematics correctly and wrote the most creative and convincing reports.

Reflect on what's working and why it is working

Since it is a group project and the prospect of multiple “correct” solutions is stressed when the assignment is given to the students, their interest is piqued immediately and they are also made immediately aware of the fact that this lab cannot reasonably be completed at the last minute. Therefore, groups are formed quickly and discussion begins and continues throughout the week – students are forced to actually talk about problem solving, mathematics, and calculus, rather than just filling numbers into some template. The stress on creativity, explanation, and good writing also tends to integrate mathematics better into the rest of their academic experience.

Describe student reaction to the innovation

Although students generally dislike the math labs, this particular lab is better received than most of them. Once they start to actually work on the problem, they tend to debate different approaches to the solution and the presentation (report) of the solution, both within their own group and with other groups. They are investing much more time and thought in this lab than in any of the others and complaining less about it. The chance to earn bonus points especially encouraged imagination and creativity in the writing aspect – this actually seemed to carry over to the next math lab where the imaginative and creative writing continued even without the lure of bonus points.

Describe how this sustained innovation can be implemented in other courses

Five aspects of this innovation can be used in other courses: students working in groups, the use of an open-ended problem without a single “correct” solution, the use of technology as a support to the thinking process, the stress on clear scientific report writing, and the emphasis on creativity.

Sustained Innovation

Description of Innovation Use of peer evaluation as a learning experience for both presenters and evaluators

Title of Innovation Peer Evaluation of Research Presentations

Name of Innovator Barbara Bendl Reilly

Telephone Number 215-895-1120 **email address** b.reilly@usip.edu

Department Mathematics, Physics, Computer Science, & Statistics

Type of students 2nd year students

Course or activity where implemented: IH201-202: Infinity in the Development of Science

Describe goals of innovative educational activity

1. to increase attention during student presentations
2. to promote critical review of presentations
3. to provide peer feedback on presentations to assist in student self-evaluation
4. to foster a sense of camaraderie and mutual cooperation among the students in the class

Describe the original innovation and its implementation

Students, individually or in groups of 2 to 4, research a topic relative in some way to infinity and then write a research summary term paper. The student or group also makes a 10 to 15 minute presentation of their topic to the class. These student presentations run the gamut from informal conversational lectures to video or PowerPoint presentations. For each of these presentations, the students in the audience fill out an anonymous peer evaluation form that is divided into 4 major categories: content, organization, use of visual aids, and delivery. The peer evaluators are instructed to give the presenters a numerical ranking, choosing from 1 (excellent), 2 (good), 3 (satisfactory), and 4 (unsatisfactory) and also to include written comments in each category. After the class, I tabulate the numerical rankings and give the presenter(s) an overall peer evaluation score. I also read the written comments. I use the peer evaluation score as a reference in my assignment of the presentation grade but I reserve the right to overrule. Generally, the peer evaluations and my evaluation are relatively similar – neither seem to be unduly swayed by glitz over substance. At the next class meeting, I hand the presenter(s) a packet of the peer evaluations and my tabulation sheet so they get fairly quick feedback.

Describe any changes that you have made in its implementation

Although, I have several slight modifications in mind for the next implementation, at present I have not made any changes.

Reflect on why this innovation continues to work

Use of this peer evaluation system focuses everyone's attention on what constitutes a good presentation. Since the evaluators will also be the evaluated at another time, there seems to be a concerted effort towards fairness and understanding as well as critical review. Student evaluators are forgiving of technical glitches but not of presenters who have obviously not practiced their presentation. They do not hesitate to point out flaws in a presentation but they generally do so in a constructive way, with suggestions for how to handle the problem in future presentations. They also seem determined to find some aspect to praise, even in the uncommon event of a truly awful presentation.

Describe student reaction to the innovation

Students like this procedure. It helps keep them alert during presentations which is sometimes hard as this class meets at 8:30 in the morning. It gives them a chance to express their opinion. They have expressed feelings of empowerment because they know that I will give their opinion serious consideration. Getting the packet of peer evaluations back at the next class gives the presenters detailed responses to the "how did it go?" question and makes my assignment of presentation grade seem less arbitrary and more of a group consensus.

Describe how this sustained innovation can be implemented in other courses

I use this peer evaluation method whenever I include student presentations as part of a course, such as in MA350, Chaos and Complexity. Certainly, other instructors could also do this.

What advice would you give to other people adapting this innovation?

Keep the evaluation form simple but include clarifications of the evaluation categories so that students can make informed decisions on the different aspects of the presentation. Allow sufficient time for the evaluators to express their thoughts fully in the written commentaries.

Are you aware of any other USP faculty who are adopting or adapting this innovation? If yes, how are they using it?

I'm sure there are others using peer evaluations but I personally know only that Peter Miller uses peer evaluations and a peer evaluation form similar to mine in his PT courses.

Sustained Innovation

Title of Innovation Algebra and Functions for Mathematical Analysis / Beyond Algebra

Name of Innovators Barbara Bendl Reilly, Carole Ann Siegel, and Amy Kimchuk

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email address b.reilly@usip.edu; c.siegel@usip.edu; a.kimchu@usip.edu

Department Mathematics, Physics, Computer Science, & Statistics

Type of students 1st semester freshmen

Course or activity where implemented MA101: Mathematical Analysis I

Describe goals of innovative educational activity

1. to give students an algebra and functions textbook that was readable
2. to highlight those algebra and function concepts and skills necessary for student success in calculus at USIP
3. to provide students with practice problems in the needed algebra and function concepts and skills

Summary of original innovation and its implementation

Students entering USIP, even the better students and students who have already taken high school calculus, need some review of algebra and functions. When MA101 and MA102 became the core curriculum mathematics sequence this review was incorporated into the first two-thirds of the MA101 course. However, the lack of a good and readable textbook that addressed the topics that USIP students especially needed to review was a problem. So Barbara Reilly and Carole Siegel wrote our own textbook, Algebra and Functions for Mathematical Analysis, incorporating topics in a way that we felt was both accessible to our particular student population and relevant both to a successful completion of the math core curriculum sequence and to the major programs of study at USIP. Our textbook was adopted along with a separate calculus textbook for all students enrolled in MA101. All MA101 instructors use Algebra and Functions for Mathematical Analysis, referring to the topics and examples and assigning exercises from it. This book is the 7th edition and it has undergone major expansion twice.

Describe any changes that you have made in its implementation

Although Algebra and Functions for Mathematical Analysis, 7th Edition, served its purpose well, it was apparent to the authors and others that a major change was necessary to accommodate the use of technology in mathematics. After departmental policy was changed to require all incoming USP freshman to have TI83+ graphing calculators for the MA101 and MA102 courses, a third author, Amy Kimchuk, was added to the team to write an additional technology section for each unit in the book. Each of these technology sections includes detailed

instructions on TI83+ graphing calculator functions and their use, worked examples, and student exercises relating to the mathematical topics of that unit. This actually became a major enterprise for all three of the authors and resulted in a textbook that was different enough from the original to merit a new title, *Beyond Algebra*.

Reflect on why this innovation continues to work

Concentration of information on fewer, selected topics makes the textbook less intimidating to students and prepares them more precisely for what's to come in calculus. Topics that are interesting mathematically but not immediately useful have been pared down or eliminated completely. Students spend the bulk of their time practicing skills that they will be called upon to use within the next year so there is less time for forgetting and students can see the relevance of what they are learning and practicing within a relatively short time span. The detailed scope of the technology units makes it easy for the students to become comfortable with their TI83+ calculators and actually make use of this powerful technological tool.

Describe student reaction to the innovation

Generally student reaction has been very positive. They like the readability of the text and the number of practice problems. The new technology sections were very well received. They seem pleased that we have put in the time and effort to tailor a textbook just for them – this seems to motivate them to an increased effort on their part.

Describe how this sustained innovation can be implemented in other courses

Since *Beyond Algebra* was written for a specific course, it does not translate directly to other courses. However, the idea, “if you don't like the available textbooks, write your own”, is certainly transferable to other courses. Also, while writing a textbook alone might be intimidating and frustrating, the team approach we took made it a manageable task.

Title of Innovation Use of Computer Simulation and other Resources in a Sales Management Class

Name of Innovator Glenn Rosenthal

Telephone Number 215-596-8879 email address g.rosent@usip.edu

Dept: Pharm Marketing and Management

Type of Students Pharm Marketing and Management

Course or activity where implemented: PA 381; Sales Management

Describe Goals of innovative educational activity

To provide a realistic opportunity to implement issues in sales management from text and lectures.

Describe the Innovation and its implementation

There were 4 activities I used to cover the material I felt was important for the topic: a 1-2 page case analysis paper each week; a guest speaker who came in at both the beginning and the end of the semester; a computer simulation game called "Sales Force: A sales management simulation game"; and finally, the opportunity to practice team development with consultation from a faculty member experienced in team practices.

Case Analyses: The text provided two to three cases at the end of each chapter, which I used for 1-2 page analytical writing assignments each week. I required the writing assignment because of the importance of writing to the improvement of analytical and critical thinking skills. It also helped to develop a business oriented writing style.

Guest Speaker: A District Sales Manager from Abbott volunteered to speak to the students at both the beginning and end of the semester about her issues and experience as a manager. During the session at the end of the semester, each team presented their results from the computer simulation game and got her feedback on what she would have done in their circumstances. This provided a level of realism that I thought was important.

Computer Simulation Game: The game pitted 5 teams of 4 students against each other for 30% of their grade. The game itself was very detailed. Students made several choices each week, with a week representing 3 months. They could hire and fire sales reps, and decide how much of their time as managers they would spend on different management tasks. They could also decide how much training a rep would receive and on which topics. The information they had to look at as a result of their decisions listed how many reps they had that quarter, how much both they and the reps worked at different tasks, what their average order sizes were and what their overall sales results were. It really was a very well designed game and pretty easy to run.

Most important was the discussion their decisions stimulated. Being worth 30% of their grades the game was taken seriously which led to meaningful discussions about their management decisions and focus of their attention. At the end of the semester, most of the class felt that this game was a very important part of their education and highly recommended my running it for future classes.

Team Development: It is extremely important to provide instruction in the stages of team development and provide the opportunity for team members to practice working together. John Moore, Assistant Director for Academic Support Services, helped me by providing instruction in the stages of team development and then served as a consultant to the teams we formed to play the simulation game.

Reflect on what's working and why it is working

Team participation went pretty well. Many students commented that they got to know peers whom they hadn't known well before and enjoyed that. The attempt to instruct them on team process went less well and many felt the topic got short shrift. Since teamwork is an important topic and should be covered in depth in school, I believe I will need to develop a better plan for this topic the next time the course is taught.

Describe student reaction to the innovation

Overall, many of the students reported that this was a meaningful course that gave them significant understanding of many of the issues involved in sales management.

Will Innovation be sustained in the course?

Definitely. I may change the rules for grading and team competitiveness with the game, but I will definitely continue to use the game.

Will you implement this innovation in other courses?

Yes, I will continue to look for games and other simulation experiences for other courses

What advice would you give to other people adapting this innovation?

Spend time with instruction on team participation. This appears to be a vital part of many employment situations and students need time and opportunity to explore their reactions and get sufficient practice to work well in groups.

Sustained Innovation

Title of Innovation: Competency-Based Student Assessment

Name of Innovator: Karen J. Tietze

Telephone Number: 215 596-8854 E-mail address k.tietze@usip.edu

Department: Department of Pharmacy Practice and Pharmacy Administration

Type of Students: First professional year Doctor of Pharmacy students

Course or activity where implemented: PP305 Introduction to Clinical Pharmacy Skills

Describe goals of innovative educational activity:

To ensure that all students in the course demonstrate a minimal level of clinically relevant competency in selected clinical pharmacy skills before progressing out of the course.

Describe the innovation and its implementation:

In the past student grades in this course were based on the percent of points earned on written and practical exams. But this approach does not reflect clinically relevant competencies. For example, a student who demonstrates 75% of the correct steps for obtaining a patient's blood pressure would have a passing grade by usual grading standards. However, in a clinical setting missing even one step of the technique could invalidate the blood pressure reading. I developed two competency-based assessments in the course to ensure a minimum level of clinical competency in all students who pass the course.

Students demonstrate minimal clinical competency in select physical assessment skills and in obtaining and documenting a patient medication history. Each competency is worth a maximum of five points for a total of 10 points (10 percent of the overall grade). Minimal clinical competency is defined by step-by step physical assessment checklists and medication history content, style and format checklists. The checklists initially are presented during lecture then are used as the basis for practicing the skills during recitation.

The students practice the physical assessment skills during four one-hour recitations and optional supervised practice sessions. The students are tested on one of six randomly selected skill-sets during a scheduled practical exam. Students who correctly demonstrate all steps of the skill set earn 5 points; students who do not demonstrate competency the first attempt are given an individualized review session and then retested.

The test, review and retest cycle continues until the student demonstrates minimal competency. The number of retests is not limited but students lose 2 points for each retest.

Students obtain and document a practice medication history during recitation. The history is assessed using the medication history checklist but is not graded. The student then interviews a patient and submits a written medication history document. Students who demonstrate competency earn 5 points. Students who do not demonstrate competency receive written feedback on their errors. The student corrects the errors and resubmits the medication history. The assessment, feedback, and resubmission cycle continues until the student demonstrates competency. Again, the number of resubmissions is not limited but students lose 2 points for each resubmission.

Reflect on what's working and why it is working:

The competency-based skill assessment seems to work. Completion of the course now means that the student has demonstrated minimal competency in select physical assessment skills and medication history skills. Overall, the students seem to take the material more seriously than in the past. Most students approach these recitations much more seriously than when they did not have to personally demonstrate the skills. It's now personal! Having to demonstrate individual competency seems to motivate the students to a higher level of achievement.

Over the past four semesters 97% of students achieved competency on the physical assessment exam the first attempt; no student required more than two attempts. Prior to implementing the competency-based assessment, the average on the practical exam was in the 70's to 80's. Approximately 45% of students achieve competency with the medication history the first attempt; a few students require two or three attempts.

Describe student reaction to the innovation:

This is the first course in which most pharmacy students encounter the concept of competency-based assessment. The students are quite nervous as they learn the skills, but the nearly universal response after the practical exam is "That wasn't bad. I don't know why I was so nervous."

Will innovation be sustained within the course? Yes. I plan to develop more competency-based assessments for the course.

Will you implement this innovation in other courses? Yes, when possible.

Other comments: None.

Title of Innovation Patient Portfolio-Based Consultative Clerkship Model

Name of Innovator Karen J. Tietze

Telephone Number 215-596-8854 email address k.tietze@usip.edu

Department Department of Pharmacy Practice and Pharmacy Administration

Type of Students Fourth professional year (sixth year) Doctor of Pharmacy students

Course or activity where implemented PP661-666 Advanced Pharmacy Practice Learning Experience I-IV

Describe goals of innovative education activity

To provide a structured learning format that enhances a student's ability to assess, integrate, and apply complicated patient data in a realistic consultative model of critical care clinical practice.

Describe the innovation and its implementation

The change from the post-baccalaureate to entry-level doctor of pharmacy program brings very inexperienced non-pharmacists to my critical care clerkship site. I often have students who have never interacted with any hospitalized patient. Students universally find the complexity and rapid pace of the critical care practice environment overwhelming. Two years ago I completely restructured the rotation in an attempt to develop a model that places students in a realistic consultative practice role and systematically guides the students through their rotation activities. I reduced the number of patients followed by a student to just a few at a time (1-3) so that students have time for in-depth learning and sustained patient contact. I pulled the students out of teamwork and sit-down rounds and instituted pharmacy rounds where the students, the pharmacy resident and I round as a pharmacy team. Pharmacy rounds let the students concentrate on their professional growth and development and give us time to plan for student-initiated interventions during subsequent multidisciplinary attending team rounds. I shifted the rotation start time to an hour earlier in the morning (7 AM) so that students have adequate time to assess their patients and prepare for the morning rounding activities. I created a very formalized patient portfolio that contains the forms needed for all the patient-based rotation activities and added frequent written evaluation of all student activities.

Reflect on what's working and why it is working

The model seems to work. The students have a sense of purpose and seem better focused with the very structured activities and frequent written feedback.

Describe student reaction to the innovation

The students are happy with the rotation structure and format. Comments from student evaluations include: "The preceptor encouraged us to think through and analyze clinical situations and therapeutic topics." "She challenged me to think each disease state and drug therapy through for myself." "She taught me to separate and then integrate each problem and its therapeutic interventions(s) in a stepwise and logical manner." "Helped with organizational skills." "Most beneficial to me was our daily pharmacy rounds where we had the opportunity to discuss therapeutic and pathophysiology prior to meeting with the medical team." "Encourages (students) to think through every question, which pushes students to their fullest potential." Students who have the rotation later in the year tell me that they wished they would have had my rotation earlier in the year.

Will innovation be sustained within the course? Yes (within my critical care rotation).

Will you implement this innovation in other courses? No

What recommendations would you make to others doing this innovation?

This model requires more preceptor time than traditional models where students spend most of their time with a medical team. The trade-off is that students get very involved in patient care and make more specific contributions to patient care, which may eventually save preceptor time.

Title of innovation Use of Interaction Analysis to Evaluate the Effectiveness of Active Teaching Strategies

Name of innovator Susan Wainwright

Telephone Number 215-596-8724 email address s.wainwr@usip.edu

Department Physical Therapy Type of students Third year physical therapy students

Course or activity where implemented PT 512/513 Fundamentals of Evaluation and patient Care I&II

Describe goals of innovative educational activity

1. To increase student talk
2. To refine the type of interaction that I was trying to achieve with my students
3. To increase student talk through interactions of students with each other, rather than using me as the means of getting information

Describe the innovation and its implementation

Interaction Analysis is a method of quantifying the nature of verbal interaction in the classroom and who talks.

During the Fall 1999 semester, I began using Interaction Analysis (IA) to quantify the amount and quality of student – teacher dialog occurring in my classroom. Using published guidelines for norms of active learning in a large classroom I established goals for myself. Examination of baseline data revealed that the classroom environment was more lecture oriented than I intended. Over a six-week period I taped my classroom interactions. Analysis of the data demonstrated that I was able to achieve my goal for greater frequency of student talk in the classroom. While pleased with these results, further analysis revealed the student talk was most often a series of dialogues between individual students asking questions and my responses to those questions.

In the second phase of the activity, I developed a series of patient case studies. The students were given the cases after completing a didactic lecture and asked to work on them at home and come the following week prepared to discuss them. Students were then able to work in small groups in class to compare answers with each other. Assessment of the “classroom talk” occurred when the group as a whole came together to discuss the two or three cases to be presented.

Examination of this data revealed that the percentage of student talk again increased. More meaningful was the cluster of data indicating a much higher degree of student directed communication.

The data reflected students talking to students in a large discussion format rather than students seeking me as the source of information. My talk with the groups was reflected as a supporter or an arbiter when necessary. Analysis of the data revealed that I had achieved my goal of not only increasing student interaction in the classroom.

Reflect on what's working and why it is working

I anticipate that it will continue to IA as I further develop and refine my teaching techniques and strategies. Using IA has allowed assessing my effectiveness in employing teaching strategies to facilitate active learning in the following ways:

1. I have been able to facilitate student interaction through the use of patient cases using both small and large group discussion formats
2. Student's initiated and sustained discussion was achieved with the use of patient cases.
3. I was able to effectively exert indirect, rather than direct, influence on the classroom interactions. More specifically, the data revealed that I was able to accept and encourage student ideas, as well as use question to stimulate their talk.

Describe student reaction to the innovation

The students were unaware of the data collection process, specifically because I did not want to the recorder to alter the classroom environment. The students did respond favorably to the use of the case studied as effective learning activities. The students also expressed a preference for this more dynamic activity in the classroom.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

Describe

I find Interaction Analysis to be an effective way to assess my performance when piloting new instructional activities.

What advice would you give to other people adapting this innovation?

Establish very clear goals for what type of communication that you would want to facilitate in your classroom.

Title of innovation The Five (5) Point Coupon Certificate

Name of innovator Murray Zanger

Telephone Number 215-596-8838 email address m.zanger@usip.edu

Department Chemistry Type of students all majors

Course or activity where implemented Chemistry 212 – Organic Chemistry

Describe goals of innovative educational activity

To encourage students to learn material at a higher level than specifically required for the course.

Describe the innovation and its implementation

During my lectures and at the end of a specific series of reactions I will often end a lecture by placing a more challenging example of the discussed material on the board and inviting the class to answer the question and submit the answer to me during the next class. Over the years the response has been lukewarm at best with only an occasional good student who even tries to solve the problem.

This year I sweetened the “pot” by offering a coupon worth 5 points applicable to any exam taken during the semester. The winners (limits as to the number of available coupons are established for each problem depending on the difficulty) are presented with an official certificate signed and dated by me. The first problem set was again answered by only one good student but now many are submitting entries including several who are only fair to average students.

Reflect on what’s working and why it is working

Students at all levels of competency are submitting answers because the added incentive of securing additional points for their course average makes it worthwhile. There is also a contest atmosphere which many students find attractive. Even mediocre students submit answers and when they get the correct answer and the resulting certificate they are especially gratified.

Describe student reaction to the innovation

The overall reaction has been very positive and even when their answer is wrong, students are re-submitting because they want to find out what the correct answer is.

Will innovation be sustained within the course? Yes

Will you implement this innovation in other courses? Yes

What advice would you give to other people adapting this innovation?

Clearly state the conditions of the “game”. Set limits for the maximum number of certificates per student. Use for questions of moderate to high levels of difficulty.

Innovations in Teaching and Learning at the University of the Sciences in Philadelphia, Submission form

2001-2002

Description of Innovation

Title of innovation _____

Name of innovator _____

Telephone Number _____ email address _____

Department _____ Type of students _____

Course or activity where implemented _____

Describe goals of innovative educational activity

Describe the innovation and its implementation

Reflect on what's working and why it is working

Describe student reaction to the innovation

Describe the impact the innovation made on student learning

Will innovation be sustained within the course? Yes___ No___

Will you implement this innovation in other courses? Yes___ No___

Describe

What advice would you give to other people adapting this innovation?

Other comments

**Innovations in Teaching and Learning at the University of the Sciences in
Philadelphia, 2001-2002
Sustained Innovation Submission Form
Description of Innovation**

Title of Innovation _____

Name of innovator _____

Telephone number _____ email _____

address _____

Department _____ Type of students _____

Course or activity where implemented _____

Summary of innovation and its implementation (\leq 200 words)

Describe any changes that you have made in its implementation

Reflect on why this innovation continues to work

Describe the impact the innovation made on student learning

Describe student reaction to the innovation

Describe how can this sustained innovation be implemented in other courses?

What advice would you give to other people adapting this innovation?

Are you aware of any other USP faculty who are adopting or adapting this innovation?

If yes, how are they using it?

Other comments

