

Center for Teaching and Learning

Pedagogy Enhancement Awards Program ABSTRACT/SUMMARY OF FINDINGS

Project Title: The “Virtual Community Science Lab” (VCSL): Using Science and Technology to build a K-University Learning Community

Submitted by: Name: Lynn M. Tashiro

Department: Physics and Astronomy

Award year: AY 2007/2008

Abstract/Summary of Findings (will be posted on the CTL website):
(No more than 250 words)

This project used mobile and tablet computer technology to create a collaborative model for science education that involved CSUS professors and students, K-8 teachers and students and the local community. A “Virtual Community Science Lab” (VCSL) was created to facilitate the exchange of science and science education material. VCSL is a web site that allows the exchange of science lesson plans and experimental data relevant to CSUS students in Physics 107 and EDTE316 and K-6 students and teachers at Bryte Elementary School. Physics 107 is the capstone science course taken by students planning to become elementary school teachers. The website also contains curriculum and photos of K-6 student visits and Boy Scout Science Workshops.

The URL for the site is:

<http://www.csus.edu/indiv/t/tashirol/vcsl/>
and the homepage is shown to the right.

The VCSL has 3 components:

1. **“Teacher Education Program”:** Connects PHYS107, EDTE316, and Bryte Elementary School
2. **“School Visits”:** Contains Downloadable K-6 science Curriculum for Elementary School visit to CSUS
3. **“Scout Visits”:** contains photos of the most recent boy scout troop workshop



Note: Please return this form and your final report to the CTL Office, mail zip (6084) or email ctl@csus.edu by **October 6th, 2008.**

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ABSTRACT/SUMMARY OF FINDINGS

Project Title: Your Turn to do Science: Exploring Ob-scertainers

Submitted by: Name: Vera Margoniner

Department: Physics and Astronomy

Award year: 2007-2008

Abstract/Summary of Findings (will be posted on the CTL website):

(No more than 250 words)

The goal of this project was to introduce students to the scientific method using a hands on, fun activity. I teach Introduction to Astronomy (Astro 4), an introductory course for non-scientists and for many of these students, this is the only science class they will ever take.

I tried this activity in the last two semesters. I explained that those little black pancake-shaped boxes (commercially called ob-scertainers) had some walls and a metal ball that could roll around inside. There are twelve distinct configurations and each box is marked with a number from one to twelve. I instructed students to work in small groups of 2 or 3. The first step was for each group to draw hypothesis about three different boxes. Next, students had to find other groups with the same numbered boxes and refine their hypothesis.

Here are some examples of the discussion that follows:

1. I ask: "What observations did you use to build your hypothesis?" *I heard the ball rolling; I felt the ball rolling; ...*
2. I ask: "What observations could you do to refine your hypothesis if you had infinite resources?" *X-ray; Ultrasound; Weigh with a precision scale; Create a model and compare the sound and feeling of the ball rolling (!).* Students always suggest opening the boxes, which gives me a good opportunity to explain that we can't open and look into an atom or inside a star. Our observations are always limited.
3. I then ask for volunteers to come up and draw their hypothesis for a given ob-scertainer. Then, I ask: "Which hypothesis is the correct one?" Clearly we can never know with 100% certainty. Science is a process and we must continue to make observations and refine our hypothesis.

The end is always the same ... students are begging to look inside the box! They are curious and motivated. But, of course, I never show them.

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ABSTRACT/SUMMARY OF FINDINGS

Project Title: Developing and Assessing Civic Skills in the Freshman Seminar

Submitted by: Name: Mimi Coughlin

Department: Teacher Education

Award year: 2007-2008

Abstract/Summary of Findings (will be posted on the CTL website):

(No more than 250 words)

The goal of this grant was to assess the ways in which the Freshman Seminar course can be used as an effective site for the development of civic skills: (communication, organization, critical thinking, and collective decision making).

This goal was achieved through a variety of data collection processes.

- 1) A pre-post survey of civic skills was developed and distributed to Freshman Seminar Instructors (175 students completed the pre-survey and 72 completed the post-survey)
- 2) Brown Bag events were held with instructors of the course to share the results of the student survey and to inquire about curriculum and instruction that effectively engages students in the development and application of civic skills.
- 3) Focus groups were held with Freshman Seminar students and Peer Mentors who work in the program to determine which aspects of the course they deemed most valuable.

Findings that emerged from this data are:

- 1) Students arrive on campus confident in their basic civic skills, but find that the new social and academic demands of college require advanced skills. Curriculum and instruction that specifically support students' increased comfort and confidence as members of the University community are important.
- 2) Students value classroom activities that are highly participatory and that engage them in the development and application of civic skills.
- 3) Students who can be assertive advocates for themselves can effectively pursue academic, social, and career goals.
- 4) The Freshman Seminar can and should be used as an arena in which civic skills are emphasized and students are given multiple opportunities to practice these skills.

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**Center for Teaching and Learning
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ABSTRACT/SUMMARY OF FINDINGS**

Project Title: Interdepartmental Implementation of Human Patient Simulation (HPS)
in Nursing and Physical Therapy

Submitted by: Name: Debra Brady, Brad Stockert, Katherine Kelly

Department: Nursing and Physical Therapy

Award year: 2007-2008

Abstract/Summary of Findings (will be posted on the CTL website):

The purpose of this project was to develop and pilot test simulation curriculum for use in physical therapy education and interdisciplinary simulation experiences involving Nursing and Physical Therapy students. Human patient simulators are life size programmable mannequins that have the capability of vocalizing, generating breath sounds and heart tones, and displaying physiological changes consistent with patient emergencies. Use of HPS experiences enabled faculty to provide students with innovative education experiences to practice recognizing and appropriately intervening with patients experiencing medical emergencies without actually jeopardizing the safety of a real patient.

The long term goals in developing this curriculum are to: 1) increase of the confidence of Physical Therapy students related to some of the specific skills needed to work in critical care settings; 2) improve communication and teamwork among healthcare professionals in handling patient emergency situations (National Patient Safety Goal/Institute for Health Improvement).

Activities conducted during this award period fell into four categories:

1. *Preparation of faculty to use simulation*
 - Attendance at an advanced simulation programming conference
 - Creation of a Simulation Programming Guide
 - Training of Physical Therapy faculty by Nursing faculty on two types of simulators
2. *Development and implementation of pilot simulation curriculum*
 - Curriculum planning and writing meetings to create four simulation scenarios
 - Preview testing of simulation programming
 - Development of a pilot evaluation instrument by Physical Therapy faculty
 - Implementation of case scenarios in four simulation lab experiences with thirty Physical Therapy students and ten Nursing students
 - Revised simulation curriculum based on faculty/student feedback
3. *Dissemination*
 - Podium presentation at Sigma Theta Tau Nursing Research Symposium 11/2008
 - Poster presentation American Physical Therapy Association meeting 2/2009 (Abstract attached)
4. *Expanding use of the materials*
 - Incorporation of HPS into PT curriculum at CSUS
 - Completed application for FIPSE Grant to expand simulation curriculum and training to Physical Therapy programs in other Universities

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ABSTRACT/SUMMARY OF FINDINGS

Project Title: **Computer Generated Chapter-Exercises for Pre-Calculus**

Submitted by: Name: Bin Lu

Department: Mathematics and Statistics

Award year: 2007-2008

Abstract/Summary of Findings (will be posted on the CTL website):
(No more than 250 words)

This project is mainly to create a supplemental section/chapter assignments (internet-based) in a similar format to that of the Calculus Readiness Test. Our goals of this project have two folds: to enhance teaching and learning of the course Math 29-pre-calculus, and to improve the students' performance on the Calculus Readiness Test, which is a prerequisite for Calculus I (math 30). In this project, I created 17 worksheets/quizzes/tests, which were given weekly during the spring semester of 2008. Based on the available technology software-Test Generator of Pearson and Prentice Hall-I made these worksheets/quizzes that fit the requirements of the course and cover the scope of the Calculus Readiness Test. During the spring semester 2008, I tested these in my classes. In my classes we had weekly in-class drill, either, a quiz, a worksheet, or test. The results are sound and very positive: over 90% of students passed the class, and on the Calculus Readiness Test given in May 2008, most students passed the test (80% in one section and 70% in another section). Even though we had achieve the good result in term of students' performance in the class, but there is still a room to improve: for instance, I found certain topics needs more drills so corresponding worksheets/quizzes need to be developed in the future. It is my plan to share my findings and materials to instructors of the course.

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ABSTRACT/SUMMARY OF FINDINGS

Project Title: Technology Enhanced Collaborative Learning Community

Submitted by: Name: Hui-Ju Huang _____

Department: __Teacher Education _____

Award year: _____2008 Spring_____

Abstract/Summary of Findings (will be posted on the CTL website):

(No more than 250 words)

The project aimed to build a collaborative learning and teaching community between two courses: EDTE 316 (*Elementary Science Methods for the Diverse Classroom*) and Physics 107: *Conceptual Physics and Scientific Inquiry* and an elementary school in the local community. To measure the project outcomes, elementary school students' worksheets, and undergraduate students' lesson plans and reflections were analyzed. Overall, all the participants in this collaboration community acknowledged the development of new ways of thinking about teaching and learning. The participants learned science content, learned about different cultures in education, and learned about collaboration. One example of elementary students' comments is, "I like it very much and I think this is what we should do at school all the time." An example of undergraduate student's reflection is, "It was a wonderful experience because I haven't had a chance to teach science before and it is a very different experience from when the lesson is on the paper to when actually is taught. It is of course more exciting but also very rewarding to see the students enjoy the lesson..."

In the future, I will continue working with the undergraduate students who will be teachers to promote the desired ability of critical reflection which will inform them how to improve their teaching practices. I'll also develop a support system to help students deliberately examine their practices and effectiveness. I will provide opportunities for students to work together to identify problems, share information and determine appropriate actions regarding the "what," "why," "how," and "how well" of teaching practices.

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