

3-23-07 Deb Parziale writes:

Dear Jim, Anu, Maru, and Yvette,

Congratulations! The Title III Project Team has approved your Faculty Innovation in Learning Project application for the "The Biology/Chemistry Learning Community". We especially appreciate your contribution to the teaching Innovations on campus and your willingness and ability to assist other faculty in using similar learning strategies.

Stipends will be paid upon completion of the following:

1. Write a short summary of your completed project. Describe project activities, assessment, outcomes, and recommendations. (Submit within two weeks of project completion)
2. Update Official Course Outline with revisions made as an outcome of your project.

Thanks for your participation in this project. We look forward to reading your assessment summary.

Title III Project Team

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May 24, 2007

Title III Grant, Strengthening Institutions Program Innovations in Learning Project

Biology/Chemistry Learning Community "BCLC"

Summary

During the past semester the team has worked on program review for the following programs:

- Transfer Major Biology - leader Jim Baxter
- Technology and Preparatory Chemistry - leader Anu Ganguly
- Transfer Major Core Programs including Chemistry, Biology, Engineering and Premed - leader Maru Grant

Each of the above team members benefited from the collaboration and input gained from formation of the BCLC. Reports were submitted in April. Each report emphasized the urgent need of a science center which would centralize the sciences and thus greatly facilitate the formation of learning communities. A centralized building where all instructors are working together in close proximity would be a huge help in allowing

instructors to work together and witness what is going on in the other sciences, in addition to the enormous advantage of sharing lab equipment.

The new technology has been implemented in the courses Chem 101A and Chem 101B. Dr. Grant has been using clickers (instant response devices) and she has found that attendance and participation of students in the classroom has substantially increased. This new technology alerts the instructor to the specific areas where students are having difficulties, allowing Dr. Grant to immediately stop and address trouble spots.

Dr. Grant acquired a tablet pc computer equipped with special technology from the Teacher Learning Center at Ohlone College. On Thursday May 10 she demonstrated to the team. Whenever Maru writes on the electronic tablet, her notes are simultaneously projected to the class and recorded for the students. She incorporates this innovative technology with her Power Point slide presentation.

Here is one example. Suppose a particular slide may show the following

A chemist wishes to mix 50.0 mL of a 0.250 M solution of calcium nitrate. Calculate the grams of solute needed.

Then Dr. Grant would demonstrate the calculations by writing on her tablet pc while explaining her steps. All her written steps appear on the projected slide. Furthermore, these are saved and may be uploaded to her webpage. Since these courses are web-enhanced the students have access to the notes and review them as often as necessary. This innovative technology greatly impressed the team. Because it can be uploaded to the web, it greatly helps the other instructors know what and how the course is being taught (while providing a valuable resource to students as well). WebCt has also greatly improved instructor-student communication. Grades, special assignments, notes, are also posted providing all students with instant access.

Online homework software called "OWL" has been implemented in the General Chemistry courses. Students enjoy this feature because they get instant feedback -- they know instantly if they make mistakes; also they may compare their result with the correct answer. OWL grades homework instantly, saving the instructor much time. A very strong correlation is observed between students' completion of OWL assignments and success in the class. One of the greatest benefits to the instructor is the ability to receive

instant feedback on student progress. This enables the instructor to identify students at risk immediately, before their confusion and frustration grows to unmanageable levels. Although there is a learning curve – it takes quite a lot of time and dedication for the instructor to incorporate these technologies into the curriculum. Overall Dr. Grant finds the benefits make worth it.

These technologies have greatly strengthened the Biology/Chemistry Learning Community. Through technology, students develop and maintain close ties with one another. As soon as a student experiences difficulties they have immediate access to help and support from their peers and from the instructor. Because of the close collaboration between Biology and Chemistry, student success is enhanced in all courses in the Learning Community. Discussion and sharing of ideas contributes to greater understanding of shared themes. Overlapping concepts are now highlighted. Students appreciate how biology and chemistry are closely intertwined. For example, while working through a tough topic in chemistry, this also helps students understand the biology topics, or vice versa. Students enjoy how the technology allows them to readily access information. Thus this greatly contributes to the success of this project.

#### Future Goals of the BCLC

1. BCLC is interested in developing interdisciplinary labs which teach shared biology and chemistry concepts. For example, the same lab (say for eg. Beer Lambert's law) could be done in both Bio and Chem courses to illustrate applications in both.
2. We shared exams and noted commonalities in testing approaches. All instructors support each other in providing a rigorous and challenging curriculum. There will be ongoing discussions of ways to test critical thinking.
3. The BCLC hopes to make research skills part of the 2<sup>nd</sup> year lab experience. This can be best accomplished through an interdisciplinary approach (sharing common projects/labs) between Bio 101A/B and Chem 112A/B. The research can be set up in either lab and students should be able to come in and work on this project under the shared supervision of both (or either one) instructors.