Project Information

Using technology to engage students more effectively during lectures.

Project Title

Norris Armstrong
Project Director

Biology Division
Requesting Department

$3,999.00
$0.00

Amount Requested Year 1
Amount Requested Year 2

Project Director's Signature

Proposal Endorsement Signatures

W. E. Barstow  William E. Barstow
Department Head

Proposal Abstract (100-word maximum)

Most instructors teaching in the large lecture hall RM 404e of the Biological Sciences Building rely on a document camera or computer (PowerPoint) to give their presentations. Both devices have distinct advantages and disadvantages and, ideally, an instructor could switch between these tools freely during class. However, with the technology currently available in the classroom, changing from the document camera to the computer and back is cumbersome. This proposal requests funds to purchase an interactive pen display for room 404e which seamlessly combines the flexibility of document cameras with the ability of the computer to incorporate multimedia into presentations.
Using technology to engage students more effectively during lectures.

Innovation

Several companies have begun to offer interactive pen displays that combine the best features of both a document camera and computer presentation. Using these systems, instructors can write over their PowerPoint slides, webpages, and almost any other image displayed by the computer. Notations made by the instructor can also be saved digitally for later use and can be distributed to the students through the web or as handouts. Most systems allow the instructor to control their presentations directly through the monitor and some allow for the control of peripheral devices. Portable versions of these devices are also available which can be passed out to students enabling them to actively take part in the lecture.

Need/Rational

Room 404e in the Biological Sciences building is one of the largest classrooms on campus accommodating up to 350 students per class. The room is large enough that it does not have a black/white board because the instructor’s writing would not be legible to students sitting in the back of the room. Instead, instructors use a projector that can be controlled by several different display tools including a computer, a document camera, and DVD and VCR players.

One of the biggest challenges facing instructors in these large classes is how to engage students effectively when it is virtually impossible to interact with each of them on an individual level. Most faculty rely extensively on their presentations as a means of connecting with students and stimulating their interest in the material. PowerPoint presentations and document cameras, the primary tools used for giving presentation, are both effective for this purpose but have disadvantages that can detract from the quality of the lecture the instructor is trying to give.

Document cameras provide a great deal of flexibility and enable an instructor to answer student questions or modify their lecture as needed simply by writing on a piece of paper below the camera. However, document cameras can be awkward to use, generally have poor color balance and resolution, and can not be used for animations, video clips, or “clickers” forcing the instructor to switch back and forth to the computer if s/he wants to use these resources. In addition, the instructor must generally spend most of the class period physically next to the document camera limiting his/her ability to move around the room.

PowerPoint allows an instructor to easily integrate multimedia tools into his/her presentations and generally provides better resolution for the display of detailed images. PowerPoint lectures can also be controlled from a distance allowing the instructor to move around the room and interact with students. However, PowerPoint lectures are also relatively inflexible. It is very difficult to change a presentation in the middle of class to answer students’ questions or to follow up on unexpected but fruitful discussions.

Ideally, it would be helpful if both devices could be used simultaneously. This can be done in 404e using the technology that is currently available but only awkwardly. An interactive pen display system would allow instructors to take advantage of the best qualities of both approaches in an efficient and dynamic manner. The instructor could use PowerPoint lectures that incorporate animations and video and that could be controlled from different locations in the classroom using a remote control. The instructor could also annotate the lecture being presented as needed simply by going to the monitor and writing
on the screen with the attached electromagnetic pen. Notations can be saved for later use or erased reverting the presentation back to its original state in preparation for the next class.

**Specific Request**

The proposal seeks funding to purchase an interactive pen display system for use in Biological Sciences room 404e. We are currently evaluating products from two different companies.

SMART Technologies produces the Sympodium display system. These systems have already been used some classrooms on campus including Chemistry and have worked well. One advantage to the Sympodium system are that they are available in 17 inch and touch screen monitors that could potentially be used to control peripheral devices such as the DVD player and VCR.

GTCO Calcomp produces the InterWrite iPanel system. The iPanel is similar to the symposium but currently is only available in a 15” screen and does not have touch panel capabilities. However, iPanel is compatible with Interwrite’s SchoolPad devices. SchoolPads are digitizing pads that function similar to the interactive pen display; an instructor’s writes over the pad using an electronic pen and his/her notations are transferred to the computer monitor via a Bluetooth connection. This system has an advantage in that the instructor can chose to work directly through the monitor or through the portable pad as s/he moves through the classroom. In addition, up to seven SchoolPads may be used with one computer and could potentially be passed out to students enabling them to actively participate in the presentation.

**Relevance of the project to unit and University priorities**

This project will help to fulfill one of the universities primary commitments in developing a well-prepared student body and promoting high levels of student achievement by improving instructors’ ability to provide an interactive environment and engage students even in very large lecture classes. This is critical because, although it is a University goal to reduce class sizes and improve student-faculty interaction, continuing budget constraints and high student/faculty ratios mean that many UGA students will continue to take large lecture classes multiple times in their college career.

**Specific courses benefiting from the project and enrollment.**

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<th>Course*</th>
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**Total Yearly Enrollment** 5447

*Courses that used 404e in spring and fall of 2005

**Enrollment based on 2005 figures.
## Budget

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<th>Provided by Other Sources</th>
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<th>Date</th>
<th>Objective</th>
<th>Person(s) Responsible</th>
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<tbody>
<tr>
<td>Dec. 1, 2006</td>
<td>1. Interactive Pen displays will be installed and operational in Biology Division Office for faculty training.</td>
<td>Norris Armstrong – training Heath Tucker - installation</td>
</tr>
<tr>
<td></td>
<td>2. Interactive Pen displays will be installed and operational in 404E Biological Sciences for use with spring 2007 classes</td>
<td></td>
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</table>

### Budget justification narration

The amount requested is for the more expensive of the two Interactive Pen Display Systems. If the Division purchases the less expensive of the two systems, the University's Committee for Academic and Instructional Technologies will be notified of the change. The Biology Division will pay for installation and security expenses.

If the Interwrite system is chosen, we will request three SchoolPads which will enable the instructor to work with up to three groups of students in the class at one time.

A demonstration of the iPanel and SchoolPad systems is being arranged for later this fall for comparisons purposes. The Sympodium system can be viewed in the Chemistry classrooms next door to the Biology Building.

Once purchased, the Interactive Pen displays will be temporarily installed in the Biology Division Office in order for interested faculty to become familiar with the unit’s controls as well as their capabilities and limitations. The units will be installed in room 404e of the Biological Sciences Bldg by the start of the spring 2007 semester or earlier if possible.

The Interactive Pen displays will be available for use by multiple classes distributed across different departments within the Biology Division. The interactive display system will be locked to the presentation table and the SchoolPads will be stored in a locked cabinet in the classroom. This cabinet is unlocked each morning and relocked at the end of each day.

In addition to being used in class, the portable Interactive Pen display could be used to demonstrate effective teaching practices at regional and national meetings.
**Project Outcomes**

The outcomes for this project will be measured in two ways:

1. Survey of faculty who teach in 404e
   a. To determine how frequently the units are being used.
   b. To determine how instructors are using the units.
   c. To gather qualitative information on the effect of these units on student engagement from the instructors’ point of view.

2. Survey to obtain students’ views of
   a. Whether the units are being used effectively
   b. Whether the units improve the quality of their classroom experience including engagement and understanding of course material.
   c. How faculty could use these units more effectively.

**Support Plan**

The interactive pen displays will be maintained by Heath Tucker, the Biology Division’s technical support person.

Norris Armstrong of the Genetics Department will provide training on how to use the interactive pen displays to interested faculty and instructors.

One hard copy of the proposal including the signed cover page should be submitted to CAIT in care of the Center for Teaching and Learning. In addition, an electronic copy of the proposal should also be submitted as a document attachment to a message sent by e-mail to Dr. Sherry Clouser, the CTL Liaison to CAIT, at sac@uga.edu.