The Role of Technology in Student Feedback and Assessment

By Paula Vincini

According to Thomas A. Angelo in “Doing Assessment As If Learning Matters Most,”

Most of us think assessment should be first and foremost about improving student learning and secondarily about determining accountability for the quality of learning produced. In short: Though accountability matters, learning still matters most.

The National Learning Infrastructure Initiative (NLII), a major initiative of EDUCAUSE, a nonprofit association which promotes the “intelligent” use of information technology in higher education, has been concerned about a lack of understanding that assessment is to be about learning and not simply grades. In “When Assessment is About Deep Change, Not Grades”, the NLII discusses how assessment strategies can become transformative and integrated at all institutional levels “to systematically transform teaching and learning.”

While this focus on assessment is not new, the instructional technology tools to help implement meaningful assessment and feedback are. Currently, Academic Technology (AT) is focusing some of their efforts through their A Partnership in Technology (APT) internal grants program and their Summer Institute for Teaching and Learning on three promising technologies that support student assessment and feedback: Eportfolios, classroom response systems (CRS) and concept maps, including training in the use of AT’s own Visual Understanding Environment (VUE), a digital concept mapping tool.

According to the National Science Foundation funded Field-Tested Learning Assessment Guide (FLAG), assessment drives student learning “because assessment is in many respects the glue that links the components of a course—its content, instructional methods, and skills development—changes in the structure of a course require coordinated changes in assessment.”

FLAG contains a set of Classroom Assessment Techniques (CATs) for use in college and university Science Technology Engineering and Math (STEM) courses, although these techniques can clearly be adapted to other disciplines.

Included in the list of FLAG techniques are Concept Maps and Portfolios. Following are ways that the electronic versions of these techniques aid in gaining ongoing student feedback and assessment. Daniel Cogan-Drew in his article on Classroom Response Systems will go into more depth as to how these innovative tools can become a mechanism for providing instructors with feedback and assessment data to improve teaching methods and guide and motivate student learning.

Encouraging students to achieve long-term integration of knowledge is an important goal that both concept maps for individual classes and eportfolios for learning over time can accomplish. Concept maps can help assess how well students see the “big picture” in a course.

According to Hill, “…repeated concept mapping over the course of a semester was found to promote both conceptual and critical thinking in nursing education.” Faculty members can “evaluate the significance of the concepts students select, the sense of the map’s organization, and any errors in their conceptualizations of information.”

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The Eco-Linkup project is a collaborative effort between the Tufts Institute of the Environment (TIE) and the Center for International Environment and Resource Policy (CIERP) at The Fletcher School. The project was one of four 2004 APT Grant Program Recipients. Project Principals, Melissa Bailey and Eeverose Schlüter are creating an environmental Virtual Community of Practice (VCoP) that will connect an existing environmental community by providing increased awareness of Tufts University's environmental research and programs within the University as well as externally.

According to Melissa Bailey, Assistant Director for CIERP, Eco-Linkup is on track for the one year 2004-5 grant period which ends on June 30. She stressed the importance of approaching APT projects as a partnership, not only between the recipients and Academic Technology staff but among the rest of the Tufts community. Taking a team approach promotes an investment in the process. On-going involvement of users and potential users ultimately creates a better finished product.

In developing a database, Bailey and Eeverose Schlüter, Program Administrator at TIE, reviewed other research/educational databases like the Community of Science. They examined the keywords used and determined ways they could incorporate such keywords and others to maximize the number of users from multiple disciplines. They sought to encompass a vast array of subject areas and broad categories to increase search options.

Eco-Linkup project goals include the creation of: a database of environmental faculty, staff, students, alumni and other community members; a ‘matching service’ for individuals with similar environmental objectives; research clusters (e.g. biodiversity, water, or energy) allowing members to share information, develop new collaborations, and learn about existing resources that can be used in coursework and a ‘classifieds’ database highlighting grant opportunities, internships and job possibilities, and upcoming events.

As of this writing, Eco-Linkup is about to enter the Beta test phase where many different users from the Tufts community will be reviewing the database and offering feedback. Such users include undergraduate and graduate students, faculty and staff, TIE Steering Committee members, external research partners. This will enable Bailey and Schlüter to refine and expand the database.

Bailey also recommends that APT grant applicants, potential applicants and recipients talk to past grant recipients to learn about what technology applications have already been created. Bailey and Schlüter talked with Christian Zehl-Romero and (former employee) Melissa Dodd who were 2003 APT Recipients for the International Relations Network (IRN). Such conversations enabled them to better understand the APT process and incorporate elements of IRN into Eco-Linkup.

Bailey states that in working with AT and other technology professionals, faculty and staff should not be afraid to describe their technology needs in a non-technical manner. By explaining the need for teaching and learning tools in non-technical terms, it produces more practical applications and acknowledges each team members' expertise in the development process.

Eco-Linkup development will not end with the completion of the grant in June. Bailey and Schlüter plan to present the system in various venues including a University-wide staff workshop in Fall 2005. They will continue to engage members of the Tufts environmental community and other environmental groups to encourage and support environmental interdisciplinary research.

Pauline Stieff, Grants Specialist in Academic Technology, is a writer with extensive development experience in post-secondary education.
Classroom Response Systems: Case Scenarios for Use
By Daniel Cogan-Drew

Imagine you are a professor of astronomy teaching an introductory lecture course to 300 undergraduates. The class has just been assigned a reading explaining the Earth’s orbit around the sun, which followed a lecture that you gave on the subject. They have a test next week, and although you may have a chance to get an overview of their understanding from your TAs before then, you’d like to know before you move on to the next topic in today’s lecture the level of the class’ understanding. Additionally, you think it might be useful to individual students in the class if they could get a quick sense of how they are faring with regards to the material, relative to other students in the lecture. Of course, they’re not completely in the dark. They talk to their friends and receive the mean scores on tests and quizzes. And everyone knows the names of the dozen or so regular contributors.

What if you asked a multiple-choice question at the start of class? Your TAs could get a quick tally of votes by hands raised. But that takes time to tall and TAs to run up and down the stairs in the lecture hall. Not to mention the fact that everyone sees the hands go up and those that want to can tag along with the majority. Flash cards would probably not work much better. And in either case you would have to type in the poll’s results on your podium PC so that the class could see the breakdown. So perhaps you undertake to do this, but you don’t do it on a regular basis.

What might you do with the feedback that you got from the class? What would it mean if in response to a multiple choice question about the Earth’s orbit—a preview of the same kind of question the class will have to answer in a week on the exam—only 20% of the class answered correctly? It would be easier for you (and for them) to find out the bad news after the exam. Once you had the information, you’d want to do something with it. That might mean changing your plan for today’s lecture. Perhaps you would want to ask more questions, attempt to pin down the origin(s) of the misconception. You’ve been over this twice in the last month, but somehow the class still doesn’t get it. Perhaps students could pair up and discuss amongst themselves before you polled them again with the same—or similar—question. Clearly, this would cut into the time for your lecture.

Over the last 15 years, a piece of technology known alternately as a personal, class, or group “response system” has become widely available for those faculty who are interested in obtaining real-time lecture feedback on a regular basis. The system uses “Who Wants to be a Millionaire?®” handsets (less than $825 each) which transmit wirelessly to the instructor’s receiver and display real-time results on the overhead projector. Testimonials from faculty who have used the technology suggest that the extra information has changed the way they teach, both to their own and to their students’ satisfaction. At UMass-Amherst, for instance, use has increased to forty faculty members. A pilot project is currently underway at Tufts through Academic Technology. On Wednesday May 25th, Tufts will host demonstrations of the Classroom Response System (CRS) by faculty from UMass and Brown University.

For more information on these demonstrations or other CRS questions, contact Paula Vincini at 617-627-4182.

Daniel Cogan-Drew is the Technology Coordinator for the Education Department and a former high school and post-secondary teacher.

ICPSR Summer Program Available*

The Inter-university Consortium for Political and Social Research (ICPSR) is a unit of the Institute for Social Research at the University of Michigan. ICPSR was established in 1962 to serve social scientists around the world by providing a central repository and dissemination service for computer-readable social science data, training facilities in basic and advanced techniques of quantitative social analysis, and resources that facilitate the use of advanced computer technology by social scientists.

Founded originally as a partnership between the Survey Research Center at the University of Michigan and 21 universities in the United States, the Consortium now includes among its members over 500 colleges and universities in the United States, Canada, Europe, Oceania, Asia, Africa, and Latin America. Scholars are able to share common data resources, to interact and study together in the ICPSR training programs, and to utilize a common set of technical aids.

The Inter-university Consortium for Political and Social Research is an organization of member institutions working together to:
• Acquire and preserve social science data
• Provide open and equitable access to these data
• Promote effective data use

ICPSR encourages and facilitates research and instruction in the social sciences and related areas by acquiring, developing, archiving, and disseminating data and documentation relevant to a wide spectrum of disciplines, and by conducting related instructional programs.

Tufts is a member of ICPSR and encourages interested Tufts faculty to attend ICPSR’s Summer Program. Financial assistance maybe available to Tufts faculty. For more information, go to www.icpsr.umich.edu/training/summer/index.html or contact Rebecca Sholes in Academic Technology at 617-627-4065.

* This information was excerpted from the ICPSR website: www.icpsr.umich.edu
How Can I Use Tablet PCs for Teaching?

By Paula Vincini

According to the Wikipedia, “A Tablet PC is basically a computer shaped in the form of a notebook except with the capabilities of being written on through the use of digitizing tablet technology or a touch screen. A user can use a stylus and operate the computer without having to have a keyboard or mouse.”

You can use the pen directly on the screen like a mouse to select, drag and open files or handwrite notes and communication. One real value of teaching and learning with Tablet PCs is that all actions on the tablet get saved into a file, which can be put on a CD, floppy disk or on Blackboard site for review.

If students are working with Tablet PCs, they can work privately taking their own notes on the tablet and save it for later viewing. In a networked environment, they can share notes, work in groups, and submit materials to the instructor to be shown to the entire class.

As a tool to facilitate active learning and efficient teaching, it has been used in the following ways:

• For brainstorming, collaborating, storyboarding, sharing and problem-solving.
• To give “control” of the instructor’s Tablet to a student to finish or comment on a problem.
• To select specific student answers or work to display to all students via the Tablet followed by discussion, group work or further annotations.
• To provide creative interaction, mobility, and act as a just-in-time creativity tool with the added advantage of saving every sketch, rapid prototype and addition.

For more information on Tablet PCs, go to:

**UIOT leads the way with tablet computers**
www.science.uoit.ca/NewsEvents/Tablet.htm

In a pioneering pilot project, science professors at Canada’s newest university are harnessing technology to take learning to a new level. The University of Ontario Institute of Technology is believed to be the first university in Canada to teach using tablet personal computers in every course across an entire faculty.

**Tablet PC and Computing Curriculum 2004 RFP Awards**

The objective of the Microsoft project is to create new and innovative course materials and educational pedagogy that take advantage of the Tablet PC, mostly in the computer sciences.

**Tablet PCs in Education**
www.nitle.org/resources/issues/tabletpc.htm

MIT, Bentley College and the University of Texas at Austin tried Tablet PCs as part of a Microsoft “Rapid Adoption Program.”

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**Technology Resources for Student Feedback and Assessment**

**Doing Assessment As If Learning Matters Most**
Thomas A. Angelo from the May 1999 AAHE Bulletin

**When Assessment is About Deep Change, Not Grades**

**Field-Tested Learning Assessment Guide**
www.flaguide.org

**Nine Principles of Good Practice for Assessing Student Learning**
American Association of Higher Education
www.aahe.org/assessment/princip1.htm

**Electronic Learning Portfolios and Student Affairs**
Helen Chen and Cynthia Mazaow, Stanford Center for Innovations in Learning
www.naspa.org/netresults/PrinterFriendly.cfm?ID=825

**Concept Mapping in a Pharmacy Communications Course to Encourage Meaningful Student Learning**
Lilian H. Hill, PhD
School of Pharmarcy, Virginia Commonwealth University
www.ajpe.org/view.asp?art=aj6805109&pdf=yes

**EDUCAUSE**
www.educause.edu/

**National Learning Infrastructure Initiative (NLII)**
www.educause.edu/content.asp?Section_ID=3#what