Current Situation

- Colleges and universities adopting laptop mandate

- Students required to have laptop computer with wireless access to Internet when they arrive on campus

Current Situation

- Instructors want to take advantage of the availability of powerful technology in classroom

- There is a real opportunity for instructors to develop new pedagogy to improve teaching and learning
Unfortunately, a sobering fact …

… there is a surprising scarcity of software that can facilitate teaching, promote interactivity, and enhance the learning process in a technology-rich classroom.

At Clemson University
Since January 2004
Multidisciplinary group of instructors of laptop-enhanced courses
Collective design of a software package

Instructors wanted software that allows students to use their computers to submit:
- responses to questions
- documents
- digital images
- PowerPoint presentations
- student-edited video clips
- links to student-developed web pages
- links to any other web page

Instructors wanted software, under instructor control, to provide an environment for:
- peer-learning (students observe other students’ work)
- class discussion and collaboration,
- comparison and contrast of opinions,
- discussion threads (students can reply to submissions)

Instructors wanted software, under instructor control, to allow for:
- anonymous submission (students can see, but do not know author of, submission)
- privacy (students see only their own work)
- convenient and rapid assessment of learning (through polling)

Result? The evolutionary development of a web-based software package called: MessageGrid

Every semester since January 2004, more instructors use MessageGrid
At semester’s end, instructors discuss possible improvements
Suggestions with most instructor support are implemented
What is MessageGrid?

- MessageGrid is a web-based software tool.
- Facilitates class activity in which individual students or teams input responses that class needs to view in their entirety.
- The activity may be in class or out, synchronous or asynchronous.
- May be used in any type of course: laptop, distance-education, or traditional-classroom (with web-connected computer attached to a projector).

Differences Between MessageGrid and a Discussion Board?

- Unlike a discussion board, MessageGrid can display all student responses at the same time in a 3D grid, table, or chart, allowing comparisons among and mergers of entries.

Differences Between MessageGrid and a Discussion Board?

- Instructor has option to keep student submissions anonymous or private.
- Instructor may add to (critique, correct, elaborate, etc.) posted responses, making saved grid suitable for students review.

Differences Between MessageGrid and a Discussion Board?

- Students may post a response in any grid cell at any time.
- Students may post multiple responses in a single grid cell.
- Students may reply to any response, creating a threaded discussion.

Using MessageGrid

- Step 1
  1. Instructor designs and creates grid
  2. Prepares clicker questions
  3. Releases grid to students
  4. Uses grid in class

- Step 2a
  1. Students open grid
  2. Submit text, images, documents, presentations, video, audio, links, etc., as required
  3. Synchronous access in class or asynchronous access outside of class.
Using MessageGrid

Step 2b

4. Students post responses to instructor prompts
5. Respond to clicker questions; view results
6. View submissions by other students (if allowed)

Using MessageGrid

Step 3

1. Instructor assesses and corrects student submissions
2. Makes corrected work available to respective students, or entire class

Sample Grid: Recursion Exercises

Grid Management Functions

Instructor has typical grid create, save, modify, and delete functions, and decides which users may access grid.

Clickers: Quick Assessment

Software clickers allow an instructor to quickly develop short quiz questions to assess whether or not class has learned current material. Results are immediately assessed and displayed graphically.

No More Submissions!

Freezing the grid prevents any additional submissions.
In this exercise, students were asked to submit a recursive method to solve each of the assigned binary tree recursion problems.
In this exercise, students were asked to submit a recursive method to solve each of the assigned binary tree recursion problems.

MessageGrid allows students to submit multiple submissions.

Both instructor and students may reply to a submission. Replies form threads which can be viewed in tree-structured format.

Some student responses were correct. Others were not.

One advantage provided by MessageGrid … with well-designed exercises, the instructor has a tool with which he or she can quickly and conveniently evaluate student ability, spot problems, and address student weaknesses early.
Another advantage provided by MessageGrid is that students can save on their laptops the results of a class exercise for future review.

And another advantage is that students can learn how different people approach a problem in different ways by studying the responses provided by fellow students.

And one more advantage is that the instructor can design a grid so that each student contributes to a large collaborative analytical effort benefiting all in the class.

Technology Used
- Microsoft VisualStudio.NET 2003/2005
- Internet Information Services 6.0
- SQL Server 2000

Future Plans for MessageGrid
- 2005 – 2006 school year
  - Continuing development of functionality
  - Comprehensive online user guide and tutorial
  - Currently seeking funding to conduct formal assessment during the 2006-2007 school year of the effectiveness of MessageGrid as a teaching and learning tool
  - If proven pedagogically effective, we will seek funding to disseminate the software to educational institutions during the 2007-2008 school year.

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