Spotlight on Teaching and Technology

Making Learning Memorable with Well-Chosen Practice
By Kathy Ross

CENTER FOR
TEACHING, LEARNING AND ASSESSMENT

When students practice what they are learning, they are more actively involved and tend to remember better. Practice is a core component of learning, and it does take time. Here I look at ways to design practice into courses.

Clark and Mayer wrote a book *e-Learning and the Science of Instruction* about guidelines for enabling effective online learning, but I believe some of what they suggest is also applicable to learning in general. In this article, I'd like to bring you their perspective about ways to use *practice* in learning.

To learn content, students need to (1) determine what elements are most important, (2) connect those elements to what they already know in a way that makes sense, and (3) store and retrieve the new knowledge when a situation warrants it (Clark and Mayer, 2003, p. 156). The authors identify three principles we can apply when using practice activities to improve student performance.

First Principle: Practice should mirror the job. Our best choice is to look for practice examples that allow students to use their new knowledge and skills in a similar way to their use on the job or in life. Setting practice into job-related contexts helps students store their new knowledge along with the thinking processes and environments in which they applied them during practice. For example, practicing the ability to cite credible evidence persuasively when addressing a group or writing a concise executive summary is likely to aid the ability to influence others when needed on the job. It is closer to a job-related task than answering test questions about ways to persuade. When students enter settings in life similar to what they practiced, the likeness between that environment and the learning context helps trigger the memory

for the knowledge and skills needed (Clark and Mayer, 2003, p. 157.)

Second Principle: Important tasks need more practice. There is not enough time to practice everything. As you look through the list of your objectives—what you want your students to be able to *do* as a result of taking the course or completing the lesson—you will be able to identify which tasks are the key ones to accomplish. Those are the ones best suited for investment of student practice time. (The next principle will help you with the ones that did not make this key list.)

Here are some general ideas that you can use to plan practice activities, listed by category of type of learning.

Fact – complete a task using the fact
Concept – identify another example of the concept
Process – use a flow of events to make a prediction or solve a problem
Procedure—use given steps to perform a task
Principle – apply the guidelines to solve a new problem or perform a task
(Clark and Mayer, 2003 p. 155.)

One research study by Wiley and Voss (1999, as cited in Clark and Mayer, 2003, p.158) found asking students to analyze an issue by generating its pros and cons resulted in deeper learning, more original analysis, and less copied information than did assignments to write a narrative, explanation, summary, or argument.

Build in a feedback loop so students can find out promptly how they are performing and what kinds of improvement they need. Feedback does not have to always be provided by an instructor. It may be delivered at times by peers, by technology, or by the learner herself.

Third Principle: Coach students to build a habit of asking themselves questions while they are studying. Research has found benefits in asking "why" questions after reading segments (McDaniel and Donnelly, 1996, as cited in Clark and Mayer, 2003). This technique increases reading comprehension and can be applied to the study of secondary tasks—the ones did not make the "key tasks" list, but still have importance. This is particularly effective for learners who are less skilled or knowledgeable. Consider the report that "Most people process information mindlessly, resulting in poor understanding, learning, and memory" (Pressley, Wood, Woloshyn, Martin, King, and Menke, 1992, as cited in Clark and Mayer, 2003, p. 167.) Learners who successfully process information spontaneously are an exception; asking questions when reading takes time and effort, interrupts the flow of reading, and is perceived as more of an obstacle than enhancement. Those are reasons why it *is* challenging to convince students to do this on their own. To coach students in forming

Tech Tips

by Chérie Dodd

Please submit suggestions or requests for more information to cmdodd@iuk.edu

~ SITES TO REMEMBER ~	
CTLA Home	http://www.iuk.edu/~koctla
CTLA Technology	http://www.iuk.edu/~koctla/technology/
Knowledge Base	http://kb.iu.edu
IU Free Software	http://iuware.iu.edu
Oncourse CL	http://oncourse.iu.edu
Oncourse CL Demos	http://kb.iu.edu/data/arbl.html

Knowledge Base

It's as easy as **ABC** or rather http://kb.iu.edu . **Have you used it recently?**

Indiana University has an extensive Knowledge Base (KB) that contains over 12,500 documents. Here you will find the answers to those technology questions you've been longing to ask.

Go to **kb.iu.edu** and you will notice that there are 4 options on the tool bar, one of which is an option to see the Knowledge Base **Menus**. This will provide broad categories you can choose from to find Knowledge Base documents (KB Docs).

For example there are options for looking up Oncourse and OneStart help documents.

- Original Oncourse
- Oncourse CL
- OneStart

The KB has a full text search to locate items. Type your query in the search items box. E.g. type in **Oncourse CL Gradebooks**. All the documents pertaining to the Oncourse CL gradebook will be listed.

The Knowledge Base also contains KB Docs on setting up accounts, setting up the VPN (Virtual Private Network), and information on Microsoft Products like Excel or Macromedia/Adobe Products. If you cannot find the answer to your question in the database, an option to redirect your query to a consultant is provided as shown.

Take the plunge and explore the Knowledge Base and encourage your students to use it as well.
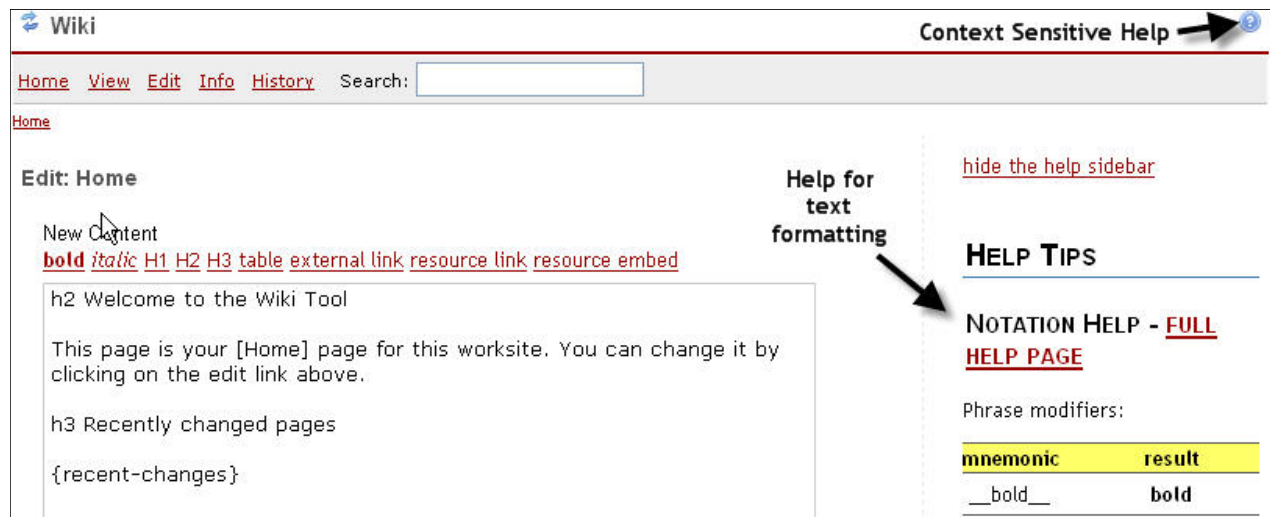
New Technologies

What is a Wiki?

"A Wiki is a website or similar online resource which allows users to add and edit content collectively."
http://www.parliament.vic.gov.au/sarc/E-Democracy/Final_Report/Glossary.htm
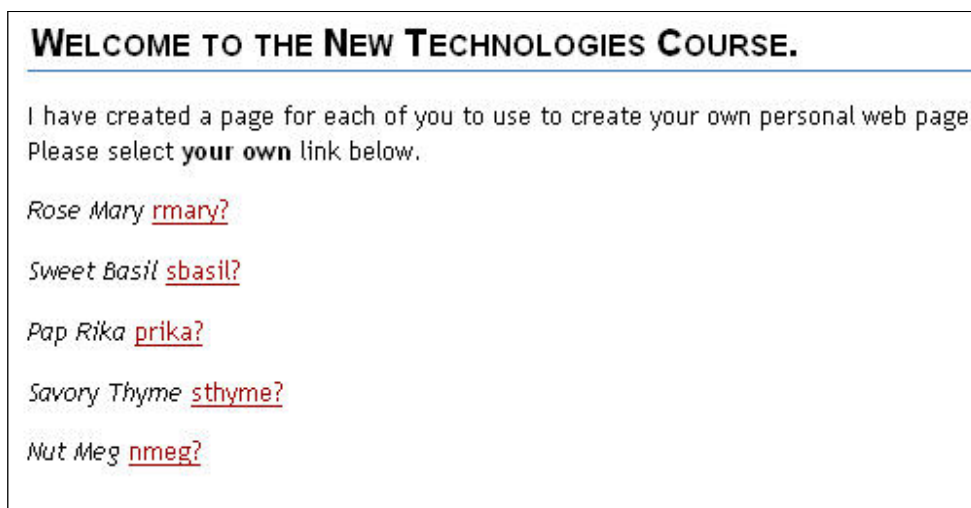
How do I use the Wiki in Oncourse CL?

1. Explore the three feature demonstrations for the Wiki tool in Oncourse CL:
    - **Add Wiki to a site**
    http://www.indiana.edu/~ittrain/oncourse/feature_demos/qs_wiki_add_tool.htm
    - **Add and edit wiki pages**
    http://www.indiana.edu/~ittrain/oncourse/feature_demos/qs_wiki_edit_addPage.htm
    - **Add links to a wiki page**
    http://www.indiana.edu/~ittrain/oncourse/feature_demos/qs_wiki_addLinksToPage.htm

2. There is a context sensitive help for the Wiki tool in Oncourse CL
3. A help is displayed for the text formatting rules for Wiki on the **Edit** Menu within the Wiki Tool. A set of Help Tips is displayed on the right hand side. Select the **FULL HELP PAGE** link for more detailed help.

How could I use Wiki in my class?

1. Allow students to create web pages within your course. Set up a link for each student to provide an individual area for them. These pages could also be used for Lab Reports or Clinical Reports.

2. Wiki could be used for peer review. Students could review other students' web pages or documents using the Wiki tool.
3. Wiki can be used for group work, where a group of students need to collaborate on a web page or document, or collectively create a report. Create links in the Wiki for each group.

WELCOME TO THE NEW TECHNOLOGIES COURSE.

Copy the document you received on New Technologies to your group space below.

Each group **MAY** only add comments to the document in their **OWN** group space.

LIONS lions?

TIGERS tigers?

BEARS bears?

HAVE FUN

Home last modified by Cherie Dodd (cmdodd) on Sep 22, 2006 11:02:22 AM

In the example below of the Lions Group you will notice that images can be embedded on the pages.

Wiki

Home View Edit Info History Search:

Default_template > Home > Lions

LIONS

This is the group space for the lions.

For more ideas on how to use Wiki in Education read the article "**Ways to use Wiki in Education**"
http://www.scienceofspectroscopy.info/edit/index.php?title=Using_wiki_in_education#Ways_to_use_Wiki_in_Education

Please check out the new Oncourse Training Schedule http://www.iuk.edu/~koctla/technology/Schedule.shtml
We are offering classes on the new Oncourse CL as well as other interesting programs.

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questions, you can start them out with some generic questions as examples and even model their use in class. Examples of generic questions include (1) How does ___ affect ___? (2) How are ___ and ___ similar? How are they different? (3) How could you use ____ to ___? (4) What are benefits and limitations—pros and cons—of ___? (Clark and Mayer, p. 18.) Try a shorter reading segment in class and show how they can use these questions to monitor their understanding of their reading. Give them some practice and feedback in creating and answering questions to prepare them to continue to use questions to assess their learning.

Reference

Clark, R.C. & Mayer, R.E. (2003). *e-Learning and the Science of Instruction*. San Francisco: Pfieffer.