And now, for something completely different. What we’ve just heard about from Art Graesser is something I would love to be able to use in my teaching and my classes right now. But I’m frustrated because I’ll be retiring in two years and won’t be in the classroom after that, so I won’t get to see this actually realized.

But what I want to do is talk a little bit about things that are available now, that you can use in your teaching…my proposal, following Edwin Land’s definition of “insight,” for today’s ‘aha’ moment is, at least with respect to this presentation, that ‘knowledge is not enough’—we need to shape both knowledge and skill. What’s so exciting about the computers and video-games is the skills shaped by them—learning goes beyond knowing being able to do what one knows. We need to embrace that insight. We need to find ways to measure not just what people know but what they can do with their learning.

Let me say a bit about skills in order to set the stage. In a general sense, the three sets of core skills that higher education seeks to develop are (1) intellectual skills, such as critical and constructive thinking; (2) communication in all of its facets; and (3) social interaction skills—working with others, leading, and so on. When you examine learning outcomes, as we have at Bowling Green, for instance in computer science, look at this learning outcome in computer science: ‘Work effectively with a client and members of a software development team to analyze, specify, design, implement, test, and document software that meets the client's needs.’ The statement includes writing, communicating, social interaction, problem solving and critical thinking skills all rolled into one. The performances we care about integrate knowledge and skills.

Now, the kind of structure we live with in the academy breaks that integration apart, by putting writing over there in freshman composition and maybe in a capstone course, and the rest of knowledge and skill into many discrete courses. We need to figure out how to focus on holistic performance, not just the declarative knowledge that underlies it. So, if you look at a Venn Diagram relating these three sets of skills, what we need to figure out how to do is to increase their overlap, emphasizing effective performance in the context of solving problems.

So, having set the stage, I’d like to talk about two online technologies available now, one called Calibrated Peer Review (CPR), the other electronic portfolios.

My coverage of CPR going to be very fast. Google “calibrated peer review” and the first item returned will be a website at UCLA. Orville Chapman, a National Academy chemist, created CPR with National Science Foundation support. Chapman was frustrated by large classes, 200 students, and how to get them to write something. CPR works by having an instructor create a simple or a multi-part assignment, and then three sets of calibration training responses to that assignment (one might be strong, another...
average, another weak, or you can mix the profiles of strengths and weaknesses within the responses).

Students submit their own responses to the assignment online, and then receive the calibration training responses prepared by the instructor. So suppose you have an assignment that has four different parts to it. A student would evaluate part one, rating it on a ten-point scale, and perhaps writing feedback comments, and then evaluate the remaining parts. The instructor sets a tolerance interval, plus or minus one point, or two points, or three points on the scale, and as students go through calibration training, they look at the training sample, rate it on the criteria determined by the instructor, and decide whether it meets the criteria or not. Once students are calibrated (that is, rate the training samples within the tolerance interval), they evaluate actual responses from their peers. The CPR system randomly assigns responses to reviewers, so that each reviewer evaluates the work of three peers. And finally, after evaluating the three responses of real students, you evaluate your own response to the assignment. The CPR system keeps track of whether the three peers continue to be calibrated with each other, and also whether you stay calibrated with the three peers who evaluated your work.

There are now some 555 universities, junior colleges, and high schools that use CPR. We’ve used CPR in several different courses at Bowling Green. Students’ attitudes about CPR are very positive, once you explain that you shouldn’t give yourself 10’s on a self-assessment unless you really did turn in a 10. Students like seeing their peers’ work. There’s a large assignment library that instructors can draw on, but there’s also a lot of start-up work in terms of putting assignments into the proper format. But once the assignment has been created, the system runs well and requires little maintenance. Most importantly, it immerses students much more deeply in the content of the assignment.

I’ll switch over now to talk briefly about electronic portfolios, new technology that is gaining ground at many universities. Like traditional paper portfolios in marketing, or art, or music, electronic portfolios are collections of artifacts, but done online. Students upload examples of their best performance for regular review anywhere, anytime. You get a cumulative record of performance, over semesters and the entire time someone is involved with the campus. It’s accessible to advisors, professors, and other authorized university staff members. Students decide what, if anything, becomes public.

When we set out at Bowling Green five years ago to adopt a portfolio system, we had several different criteria that we wanted in terms of desired features. The key one for me was scaleability. We now have some 16,000 portfolio accounts. I couldn’t go around talking about portfolios without having my own example of it. It looks a lot like MySpace or Facebook. About 85% of our students have such accounts, and zero percent of them would use MySpace or Facebook to get a job. But the online collection of digital artifacts is something that can be extremely helpful to students. Some of the features: (1) online storage of secured files and folders with regular backup; (2) a certified file, in which once a faculty member has reviewed an artifact and signed off on it, a digitally encrypted and signed copy of it is made that the university can then use for tracking individual learning and conducting program assessment; (3) reviewing functions; (4) ad-
hoc groups of individuals or teams can be formed within courses (because this system is centrally hosted, you can do create groups and teams across universities); (5) search for people within various settings and with various interests through their profiles; (6) share digital objects; (7) a course-management system is built in; (8) blogs and Wikis are built in, (9) as is an email system. A big jump in the number of accounts at BGSU occurred two years ago when the system moved from separate log-in to a single sign-on inside the university portal. Now students can move between ePortfolios and other web applications with a single click— that’s a critical advantage.

Now to wrap up. There may be some of you here who, when you saw ‘technology’ come up, thought ‘technology will be the downfall of the education system.’ That’s a concern you will run into often in universities, although perhaps not from attendees at this session. Well, there was a tremendous controversy a long time ago, in 5th century B.C. It was about writing and how writing will make us stupid. Socrates said that the use of writing “will create forgetfulness in the learners’ souls, because they will not use their memories. They will appear to be intelligent, but in fact will know nothing.”

I’ll close by simply citing my favorite journal article of all time. The title is “On the folly of rewarding A while hoping for B.” We have been rewarding knowledge and measuring it with ‘no child left behind’-type tests, while hoping for effective performance.

CPR and electronic portfolios are two things we can do today that will put the emphasis where it belongs, on teaching for effective performance.