Abstract:

How Courseware Can Shape the Assessment Process

This presentation will provide a case study in the value of technology-driven conversations about assessment done in the Mathematics Department. Many colleges and universities are considering, or have implemented, web-based e-portfolio and assessment management systems, only to discover that the learning curve is steeper than expected and resistance to change higher than expected. However, the implementation process can significantly reframe assessment questions within academic programs in ways that lead to improved clarity about outcomes and measures and a tighter connection between program evaluation and pedagogy. Presenters: Jennifer Berg, Assistant Professor of Mathematics; Stephen Wall-Smith, Director of Assessment. Fitchburg State College.

Good morning. I’m Steve Wall-Smith, Director of Assessment at Fitchburg State College. I have the privilege of being here with Dr. Jennifer Berg from FSC’s Department of Mathematics. We’re here to “tell and show,” if you will: tell about how a technological paradigm for assessment – especially assessment of student learning – changed one department’s approach not only to assessment, but to teaching and advising, as well. I’ll get the narrative started, then Dr. Berg will not only talk about some of the things Mathematics is doing as a department, but demonstrate some of their processes and products.
I'll begin with a few explanatory remarks about the technology we’re using at the College, and how we came to use it. There are a number of products like Tk20, the assessment data-management system we use at FSC. TracDat and LiveText are a couple of the others. Fitchburg State applied for and received a Davis Educational Foundation grant to buy a campus-wide license for a program that was already being used in our own Department of Teacher Preparation.

In a perfect world, a college-wide committee would have exploratory conversations, then gather requirements and specifications from many disciplines before buying and installing a data-management system. In reality, the process sometimes moves faster than that, possibly through the influence of teacher educators in the larger campus community or because one or more accreditors presses the case. Both forces were at work at FSC. Not only are teacher educators well-represented in College administration, but when I joined FSC in 2008, the College had just finished facilitating an arduous self-study for the Computer Science Department and was gearing up for another, for a new accreditor, in the Department of Exercise and Sports Science. Automation and streamlining assessment data collection and presentation were topics of great interest to everyone concerned with either self-study, and by extension to the entire campus.
So, that’s what we did at FSC – extended Tk20 to the entire campus. Since the Spring of 2008, every student and every faculty member at the College has had a Tk20 account established for them, along with accounts to Banner, Blackboard, and campus mail. All accounts use the same login and password, and changing one changes them all.
One of the first things we learned is that the availability of Tk20 takes discussions about assessment in different directions than they may have gone before. One of my early projects involved working on a departmental self-study with faculty members. At the beginning of the review cycle, they had articulated a list of learning expectations — outcomes — for majors, but never collected any evidence beyond anecdotes that students met the expectations. They’d never intended to, never thought it would even be possible to do so.

However, when I suggested they could perhaps link assignments students were already doing to their stated outcomes and that simply by scoring student work they could develop a composite picture of what students learned over time, with some depth and breadth, they were definitely interested.

Thinking through the implementation process raised other questions, about fixed versus moveable standards, for one. I’m a proponent of exposing students to senior-level expectations early and often. A rambling narrative essay might get an A- in freshmen comp, but it should also earn six twos on a six-point 5+1 writing trait rubric. Students who write like freshmen need to know they write like freshmen but that seniors don’t. Or shouldn’t. Sez me, that is. A very large number of my colleagues disagree.

The point is not to resolve this issue, but simply to indicate that the planning that goes on around setting up a data collection system gets issues like it onto the floor. Likewise questions about alignment, what counts as aggregate evidence that a program is successful in meeting its own goals, and strategizing about how to track and improve student performance. All hard topics, all good things to grapple with.
“HOME” SCREEN

Just a quick tour of a couple of things within the Tk20 system. Inside, Tk20 looks just enough like Blackboard to be a little confusing. It could, in fact, be used as a course management system in lieu of Blackboard, though that’s not why we got it. Tk20 does several things that Blackboard doesn’t. The most important of those things is to automate rubric-based assessment around the unique outcomes of every program. Rubric-based assessments can take a number of forms. All of them help move classroom-based observations from the realm of GRADING at the course level onto a larger canvas of formative and summative ASSESSMENT at the PROGRAM level.

Two other capabilities that have really worked for us are to allow survey administration from a central location that’s NOT the classroom – critical for certain course evaluations, especially in our Nursing program – and the other is to allow for assignments, such as program portfolios, and data collection around those assignments that span semesters and even years, as opposed to being limited to a single semester.
On the other hand, Tk20 is DIFFERENT enough from Blackboard that the dissonance can be disquieting. We found that there’s a certain nomenclature learning curve, for example, that both faculty and students have to get over: artifacts, templates, binders, field experiences, and so on. Since the functionality of Tk20 and Blackboard is not the same – an artifact is not the same thing as an uploaded file, for example – it’s probably good in theory that the languages of the two programs are varied. But it can make hamper understanding and complicate communication.

At the end of the day, the question for us was, “How do we make this new thing work for us?” The process of answering the question has been useful in many ways, has made us think long and hard about assessment of students and of the programs that they’re enrolled in.
Again, the organizing principle of everything in Tk20 are outcomes or “standards.” Program standards can actually be linked, one by one, to the College mission, though that’s not a capability we’re going to demonstrate this morning. For our purposes at FSC, the first question in making hay from a system like Tk20 was clarifying: what traits does an ideal program completer have? Then the next question is: what might count as evidence of the extent to which program completers actually have those traits? And this raises a third question: how do we know that our students are developing the traits we want them to have when the finish throughout their course of study?

This is not the end of the list of questions, by any stretch of the imagination. But these are three big ones with which Dr. Berg and her colleagues have wrestled mightily over the last year. I’ll let her tell you about all that.
Here are a few descriptive NUMBERS about the MATHEMATICS Department.

Dr. Berg?
Before I get into the details of how the campus-wide courseware has effected our assessment plan I want to give you a feel for where the plan was before we began getting into the details of implementation via TK20:

When I came into the program there had already been much development of the “assessment plan.” The plan articulates five broadly defined goals for the mathematics major and each goal has a list of corresponding evidence which will chart the progress students make as they progress through the major program.

The advantages of the broadly defined plan:
- you don’t tie yourself down when you aren’t really sure how everything will work
- you give yourself an outline for what you’d like to do – buoys to help you navigate as you get into the murky waters of the details
- anything too prescriptive will run into stiff resistance (with good cause)

This was a good jumping off point for getting into the details of how we would implement this plan, and since the campus had decided on courseware – we could get into the details of how we would collect, aggregate, and assess student work through the wider lens of the whole program (and not course-by-course).
We began by picking a single goal (of the five) to delve into the details of our technology goal. There are a few good reasons to start here:

- the evidence is naturally an electronic file (which is not true of most of our students work) this makes it easier to use the courseware
- it is the most plainly stated of the goals

Last year there were two simultaneous assessment progressions: 1) the language for the rubric we would use on technology assignments and 2) how to use TK-20 and the office of assessment most effectively

Issues we ran into immediately:
- techno-frustration (similar to techno-phobia)
- student involvement?
- faculty involvement?
- peculiarities of Math files (*.exe files and hand written assignments)

Advantages we saw (almost) immediately:
- TK20 can do a lot of the work for us (allow us to track data along several different identifiers.
- We can look at the same file with different evaluation tools.
- Relationship with TK20 vendor allowed for some initial issues to be resolved (*.exe files).
Our old rubric was the embryonic stage of the rubric that we wanted to do test runs on before we got a “finalized” version into TK20.
The components of the rubric which suggested we wanted students to be able to explore a problem using technology meant that we needed to give technology assignments that asked them to do that!

Very simple things – indicating what I will be looking for when I grade and example here is

- four integrals,
- a sentence explaining the pattern you see
- a proof that the pattern you see holds true
- a sentence commenting on the cases when the pattern does not hold.

This email just made me smile!
This is an issue particular to math since so much of our work is still done by hand.

One of the main benefits to working on assessment is the conversations between colleagues – the more viewpoints you have to listen to the more improvements you can make in your teaching.

After we’ve done four more iterations of this, I think we will have a better view of what we want and can improve our early efforts.
Important because you don’t want to limit what you do based on the limitations (perceived or actual) of your courseware. Decide on the core components of your plan and then make sure you find a way to implement it (joke about building a house).

Technology *does* have a steep learning curve so you don’t want to attack it all in one bite. However you do want to get a feel for how the courseware works in a “real” situation.

You want both ends of the tech savvy spectrum: those who are tech savvy to make bridges between the tech and the less tech comfortable faculty, and the less tech comfortable to highlight the weaknesses of the technology.