

BLADE KOTELLY: So the class is broken up into two sessions, a Monday and a Wednesday class.

Each class is two hours long. The typical class runs where at the beginning of the semester, there'll be more lecture than towards the end.

JOEL

Blade and I have developed a style for teaching the course which works very well

SCHINDALL:

for us. It's a bit like *Our Town* where the actors go through their paces, and every once in awhile they stop and the stage manager comes on stage and makes an editorial comment that couldn't be conveyed in a direct fashion.

We evolved it perhaps because Blade is charismatic. He is very effective at the teaching of the course. He knows the material. He lives the material. But I've had a lot of the experiences in industry about how this material actually plays out.

So typically Blade will do the bulk of the instructing in a very Socratic manner, which is part of what makes the class effective. Blade is very, very good at evoking from the students their ideas about what is design.

Meanwhile, I will listen to the progress. And where Blade touches on a subject which can be enhanced or embellished by talking about real world experience relating to that particular topic, I'll chime in.

Blade is wonderful about stopping just about in mid-sentence and allowing me to work with the students just a little bit to engage them on this, to share with them about it. And then I go back and sit down, and Blade continues right where he left off.

BLADE KOTELLY: The lectures are interspersed with activities. So students will do some hands-on activities every, let's say, half hour. Probably at the limit is about halfway through, about an hour through, they'll have to do something no matter what. Because you want to keep students' attention up.

There'll be some classes which are, like I said, primarily lecture-based. Some classes where it's a lot of students working in groups, and then we're stopping the

work, asking a question, sharing ideas, and evaluating it.

Some classes run in a very Socratic way. So we're really having them come to conclusions. So a class on ethics, for example, runs better when you teach it Socratically because they need to become engaged with the material. And if you're just saying, here are examples of ethical problems. And here are their solutions. They can check the box. OK, yes I get that. That makes sense to me.

Or maybe there's something where they don't quite get it, and you could bring up some interesting discussions. But I think it's more successful to have them think about it and be able to then even argue in class. And so you find divergent points, and you have different students hash them out.

And you'll find that sometimes other students will come in having turned their brain on and being sparked by an idea and say, wait a second. No, no. I think they're right.

And because we use name cards that have the name on the front and the back, the students can see each other's name and can say, you know, what Joyce said was really good. No, I like that. That was an important point.

Basically they can see each other. So it connects a class to be able to start learning together, which makes the learning process actually very important for those kinds of classes to be in person.

The class is meant to have a lot of interaction. As much as possible, really. At the end of a big school day, from 3:00 to 5:00 PM, they could be tired. And they probably stayed up really late the night before so they're probably definitely tired around that time. So you want to make sure that you're keeping them entertained and engaged with the material.

I mean, it's really-- every class has great material. Any class can have great material, but the attitude, I think, is that if you get your students to be engaged intellectually, they'll learn it faster.

Then when you're trying to shift their thinking, you're not just simply explaining a concept, but having them think differently. Then you need to engage them even more, because you need to change the way their brains are functioning and get synapses to fire even differently.

JOEL

SCHINDALL:

We bring in outside speakers for some of the talks. And the outside speakers are an eclectic mix.

In some cases, we'll bring in someone from the Engineering faculty who is particularly gifted at communicating mechanical engineering design skills or electrical or chemical, because we want to give the students-- there tend to be some discipline unique ways of thinking, and we want to give the students an idea of what the broad range is.

But other times we bring in someone who seems rather off-the-wall. We brought in someone who has started two or three restaurants in the Boston Area. And you say, a restaurateur? What does that have to do with engineering?

And the students come to the class, but don't really expect to get anything of value until they find out that designing a restaurant is a really significant design process. You have to look at what do the users want? How do you greet them at the restaurant? What type of food do you have? How do you design the space? How do you make the patron in the restaurant feel welcome? How do you make the staff function effectively?

There are many, many aspects. And to see someone in front of the room who is not an engineer, and yet who is using some of the same engineer thinking that you use to solve a problem that you never thought much about, because when you go to a restaurant you just hope that the food will come and that it'll taste good and that it won't be too expensive and that your favorite dish will be there.

But you tend not to pay any attention to how were you greeted by the hostess? How were you seated? What are the wait staff doing? How is the cook working in the kitchen? And you begin to realize that there are many more dimensions in the world

that you're interacting with than you pay attention to.

BLADE KOTELLY: If we have a quiz in class, we administer a quiz, we swap all the quizzes, we review all the answers. Quizzes tend to have a lot of the questions repeated on each quiz so if they didn't know the answer the first time, they should know it the second time. And they'll definitely know it the third time.

Because we review it in class. We'll spend several minutes reviewing that quiz to make sure students can use it as a learning opportunity, because I do want to do a diagnostic to see what are they getting? Are they doing the reading? I want them to do the reading. It's how I test for it.

But I also want to make sure that they're learning. And if they haven't done the reading, maybe they learn a little bit from this, maybe they'll ask some different questions. So we'll have someone grade and then give the result to see what the contour of the grades are.

Even though they've already swapped papers and done their own grading, students go through and check all of them again so they can understand what the contour is so I can understand are students not reading the book yet? Maybe we assigned the book too soon and they weren't able to get to the bookstore soon enough. Or maybe they're in a real crunch time, they weren't able to review some of the material.

So we try to do a diagnostic to see what's happening.

The teaching assistants will take notes, one teaching assistant will take notes during class of everything that we discussed so we can tune out the slides and topics later on. There may be an example that we haven't used before that either is topical, because now a company releases a new product that we want to be able to incorporate. Or there'll be a new way to articulate something. They'll say, oh, that's a really good way that we were able to articulate this idea. Or a really good moment that happened here in class. Let's think about how to bring that into the curriculum. So we're always taking notes about each class.