

#### 4A: Classroom Demonstration

**Mark Paternostro, PhD, Associate Professor & Associate Chair for Education, Department of Physiology & Pharmacology, West Virginia University** [00:00:00] It is really important to give students clear directions because there's lots of ways that students can get lost.

**Linda Nilson, PhD, Higher Ed. Education Expert & Author, Clemson University** [00:00:05] According to the research, teacher clarity is the most important factor in student learning.

**Linda Nilson, PhD** [00:00:19] Giving clear directions about a task, you're simply talking about what they are supposed to be doing.

**Tara Lineweaver, PhD, Professor, Department of Psychology, Butler University** [00:00:25] Before we start getting into how the brain works, I want you to take a moment to think about what the brain does. Write down six things that the brain does.

**Jess Butler, PhD, Instructor, Department of Sociology & Criminology, Core Curriculum, Butler University** [00:00:35] And then you're going to write on the board. I'm going to make three columns, individual, institutional, and interactional. And I want you to think about where you would classify each thing in your list.

**Jess Butler, PhD** [00:00:46] What do I want you to do? Do I want you to create something? Do I want you to write something? Do I want you to talk about something? And then, criteria, just sort of laying out really clearly what we think of as mundane stuff: How many pages should it be? How often do I want you to participate? Is it quantity or quality?

**Jess Butler, PhD** [00:01:02] So taking what we know now, we can imagine more effective strategies . . .

**Linda Nilson, PhD** [00:01:07] But you need also put in there the purpose, why they're supposed to be doing what they're doing, how they will benefit, what they will gain, what skills they will either acquire or refine.

**Emily Moss, DA, Assistant Professor of Music, California State University, Los Angeles** [00:01:23] We're going to deepen your understanding of the difference between content-based objectives and skills-based objectives. And we're going to do that through the creation of a lesson objective for a middle school band.

**Tara Lineweaver, PhD** [00:01:35] So there's a number of steps you need to take. You need to read the articles carefully. So please make sure that you have read all three of the articles and know them very, very well. The next step is to prepare a paper that you're going to bring with you to class and you are going to summarize some of the questions you have about the article.

**Robert Puhak, PhD, Associate Professor, Department of Mathematics, Rutgers University, Newark** [00:01:53] Break it up into pieces. First, we're going to talk about concepts, now we're going to develop them, and then we're going to actually get into the nitty-gritty.

**Jess Butler, PhD** [00:02:00] You're going to come up with a list of three pros and three cons for your solution. So be sure to think about our three levels that we just did: individual, institutional, interactional. Just go step-by-step . . .

**Linda Nilson, PhD** [00:02:12] It might be giving them the steps. If it's a relatively simple task, listing them, okay, or it might be getting students to do step one, and then leading students through step two and through step three, step-by-step-by-step, if it's, if it's more complicated.

**Tara Lineweaver, PhD** [00:02:29] And you have notes in front of you about the article discussion questions. I'll give you a second to get that in front of you.

**Tara Lineweaver, PhD** [00:02:37] When I'm making an important point, I am always writing that on the board. I do not just stand up front and spew information at them and hope that they can jot it all down.

**Professor** [00:02:46] We have this word "categorical" here and the word you use, "qualitative," um, the quality of things. These are absolutely relative.

**Selene, Student, California State University, Los Angeles** [00:02:54] Okay, that's how you spell it. And then this is the concept that she's teaching us. So that's how it helps me.

**Chris Wilson, PhD, Assistant Professor, Department of Mathematics & Actuarial Science, Butler University** [00:02:59] This is on your skeleton notes as illustration one as well. That's marked like this. Okay?

**Jess Butler, PhD** [00:03:08] Maybe do it in multiple forums, right, so say it out loud, put it on a PowerPoint, put it in an assignment, to make sure that it's clear.

**Chris Wilson PhD** [00:03:19] Jordan, what's something that comes to your mind when you think about functions?

**Jordan, Student** [00:03:22] I think of equations or variables or relation?

**Chris Wilson PhD** [00:03:25] Equations, variables, relation.

**Guy, Student, Butler University** [00:03:29] I kind of like it when a teacher writes on the board at, like, the same time that I'm writing. You can stop the teacher right when they're, like, writing something and say, like, hey, I don't get this.

**Mark Paternostro, PhD** [00:03:37] I think it's really important to recap and say, let's stop and look at what we just did before we move on.

**Mark Paternostro, PhD** [00:03:43] What's the difference? Controlled versus uncontrolled, very good. The cells in the collecting duct have more water channels in their apical surface. This is the important point.

**Mark Paternostro, PhD** [00:03:55] The verbal cues that I give in lecture over and over again, this is important, I've said this five times, I'm going to say it six times, this is really important.

**Victoria, Student, West Virginia University** [00:04:03] There's a lot of material that's being thrown at you and it's really hard intellectually to digest every single thing at the moment. Those learning cues really make you focus in on the most important things.

**Mark Paternostro, PhD** [00:04:14] Under the presence of antidiuretic hormone, the collecting ducts become permeable to urea. So under the presence of antidiuretic hormone, the collecting ducts become permeable to urea.

**Linda Nilson, PhD** [00:04:30] We learn by repetition. We learn especially when that repetition is multimodal. Students can learn in many modes. They can read something and they can hear something. But perhaps the most useful mode for learning is the visual.

**Linda Nilson, PhD** [00:04:48] By visuals, I mean concept maps or mind maps, diagrams, flow charts, decision trees, matrices, concept circle diagrams, like Venn diagrams. Give them examples of these things.

**Jess Butler, PhD** [00:05:05] So we're going to start today with a short clip.

**[Video]** [00:05:09] So it's not, it's like, it's not dangerous, right? Define dangerous, it's a bear!

**Kathleen M. Jodl, PhD, Lecturer, Department of Psychology, University of Michigan** [00:05:14] So if you look at the dark line here, that's all users, but where it gets interesting is when you break it down by age.

**Mika LaVaque-Manty, PhD, Arthur F. Thurnau Associate Professor, Department of Political Science, University of Michigan** [00:05:21] Who recognizes this hipster?

**Student** [00:05:24] Socrates.

**Mika LaVaque-Manty, PhD** [00:05:25] Socrates, correct. Socrates often regarded as the founder of Western philosophy. Anybody familiar with Greek enough to tell us what that says? Right, I hear people muttering, know thyself.

**Chris, Student, University of Michigan** [00:05:38] We have these kind of abstract concepts, all the Socrates, sense of self, know thyself, and it's the physical images on the screen that take the abstract concept and make it easier to understand.

**Lori Ogden, PhD, Teaching Assistant Professor, Department of Mathematics, West Virginia University** [00:05:50] So what I'd like to do next is practice finding slope in a couple of different examples. So let's find the slope of the line containing the following two points.

**Tara Lineweaver, PhD** [00:06:02] On your assignment sheet you'll see some examples of the kinds of things that I am looking for with these questions.

**Brenda Gunderson, PhD, Senior Lecturer, Department of Statistics, University of Michigan** [00:06:07] You have to recognize two means. So every example we do today and on Thursday is going to be about two means.

**Linda Nilson, PhD** [00:06:15] Students need models. So they need not only, like, very clear directions, but also, like, a good product will look like this. A good product will look like this.

**Lori Ogden, PhD** [00:06:25] And I'd like to give you an example of some student work. So something that can kind of guide you, a worked example that has been previously completed. And you'll also have this example to follow that should help you get a clearer sense of exactly what it is that I'm asking you to do.

**Linda Nilson, PhD** [00:06:42] And sometimes you should say a not good product, a poor product will look like this. So I don't want to see any like this. Those models make all the difference.

**Jess Butler, PhD** [00:06:51] Okay, so what you have here is this class reaction survey. So I want you guys to fill this out. It's just about what we covered, the clarification, what we talked about, how we talked about it.

**Jess Butler, PhD** [00:07:01] What are we doing that works for you? It's important to get affirmation that, yes, the visuals are working, yes, I like being able to talk to my peers, yes, I like doing active learning. And what are we doing that doesn't work for you? And so it allows me on the spot to kind of read over those, and then the very next day, change it up, do something different.

**Mark Paternostro, PhD** [00:07:18] I am all the time asking students, even after a lecture, did things go okay today? Did you understand? My lectures change every year based on student feedback. This was a little struggle. We spent too much time on this. Maybe the PowerPoint wasn't as clear here. So I use it all the time to, to change what I do.

**Linda Nilson, PhD** [00:07:35] When students understand directions and explanations, they perceive that they're learning more and they're correct. They are learning more.