



Active Learning

Beyond the Podium Podcast

Alexandra

We all wish we were that super cool professor. You know, the one who students will follow them just about anywhere, hang out in a 110 degree field filled with helicopter-sized mosquitoes just to sort seeds with. I know I wish I was that instructor sometimes. So today's guest is exactly that.

Hello my name is Alexandra Bitton-Bailey. I'm the host of the Beyond the Podium Podcast series at the University of Florida. Our podcast is on teaching and learning. And here, faculty guests offer their best tips, strategies, innovations, and stories about teach, with a little bit of humor. Our guest today is Dr. Hector Perez, associate professor of Seed Biology, Plant Conservation, and Restoration, and the graduate studies coordinator.

What Hector does best is to create opportunities for students to foster connections and to try things out. He offers them a sense of adventure through learning by establishing a classroom based on critical thinking. So how does Hector do this? Well, his first step is to invest in developing some critical thinking skills for his students, by helping his students to make connections between what they are learning, what they already know, and how it relates to the world around them.

Dr. Hector Perez

OK, so for me, when I think about critical thinking, it's a discipline. It's a set of behaviors that encompasses all the methods and activities that we need to master in order to understand how to think about a discipline.

So what I mean by that is that it's analyzing information, it's looking at what connections there are. It's understanding what the essential foundational concepts are for a particular discipline, and then building from there, looking for connections between related pieces of information, and then eventually building up to a point where we can think about how what we're learning relates with maybe different types of information from other fields and synthesizing that all together, thinking about the implications of what all those connections mean, and thinking about any consequences that may come from that, if we're dealing with any kind of decision-making.

Alexandra

Hector starts simply. He helps the students to read the material in such a way as to identify the essential parts of the material, using the critical-thinking reading template. This helps his students to make connections with the content, and ultimately to learn it deeply.

Dr. Hector Perez

And this is something that I've adopted from the foundation for critical thinking. They produce these little miniature guides-- you can go to their website. And they produce these little miniature guides on critical thinking and how to study and learn and how to ask essential questions.

And one of the tools that they show is this template for how to analyze chapters and articles and essays. And it addresses all these important points of thought on how to get the most you can out of the information that you're reading.

So it asks you to consider what the key questions are. It asks you to think about what information you have to understand in order to understand what the article is about. It asks you what point-of-view the author is coming from.

So the students have to work through all these sets of questions as they read a particular passage or chapter or article. And at the end, they report on that. And they tie together all those questions.

And what I find is that we really get away from just those two or three sentence responses. And they really have an understanding of what they need to be looking at in terms of concepts that might need more attention or how those key concepts fit in with other areas that we might be addressing later on in the semester. So it really helps them make those essential connections. And I found that to be quite useful.

Alexandra

So we asked Hector, what does this look like in real life?

Dr. Hector Perez

I taught a plant propagation class, and I'll use that as an example. So at the beginning, I do that assessment where I ask them to talk about their level of understanding for certain concepts. And then I use that to develop the content that I want to use for that particular concept cluster.

So with that class, what I found out is that students I could talk to them about, OK, here's a piece of a plant and we want to get roots on that plant. And here's what we do to get roots on that plant.

And that might be sufficient in some cases. But I really want them understand what it takes for that plant part to produce those roots from tissues that normally don't produce roots.

So from that perspective, I take it a few steps back and I try to get them to think about what the essential concepts are that lead to that tissue being able to produce those roots. So we get into the genetics, we get into the biochemistry of it. So we really deeply explore some of those fundamental concepts.

And then when we get to the part where we're doing, say, vegetative propagation, we're actually trying to get roots on those plants, then I can introduce a whole new set of concepts that explain how those tissues are doing that, but connected to the previous content on the genetics and biochemistry of how all those things happen. So that's getting them to think deeply about those concepts and make those connections.

And then I try to include different activities where students have an opportunity to share information between each other. They get to address some of the misconceptions that they may have. So they're sharing information between groups, with me, we're having discussions, we're trying to address some of the things that might not be clear. I'm asking them all kinds of deep-probing questions and let them know if we get off track, that's OK. But we always try to bring it back to the connections between those central concepts.

Alexandra

So ideally, we would take into consideration the fact that students learn best by doing, by being involved, by participating.

Dr. Hector Perez

You mentioned something really interesting. You said that being involved is the best way to learn. And one thing that really stood out for me when I was learning about active learning, I was fortunate to be trained in this during my PhD when I was working on my PhD. And there was a proverb-- I believe it was a Chinese proverb-- that really stood out to me.

And it goes like this. It says, tell me and I forget, show me and I remember, involve me and I understand. So if you really get a student to be involved in the content, I think that sticks with them for a really long time.

Alexandra

What a great illustration of what active learning does. But with that in mind, we come to a place where we have to wonder, where does one begin.

Dr. Hector Perez

So active learning is just a way of creating dynamic, engaging activities that really get students involved in the content. And that can take on many different types of forms. It's definitely a system. It's not one thing, it's many things. But essentially it's a pedagogical system that's student-centered rather than teacher-centered. So you're really looking at it from the student's perspective.

And what I do is I ask myself at the beginning of the semester when I'm planning something out, what is it that I want the students to be able to do or be able to know by the end of this topic session or concept cluster. And what I do is I use a backward design. I work from there and I design the objectives and the activities that I want to do in order to get to that final end point.

Alexandra

I know we would all love to completely change our teaching and make everything an active learning experience totally centered on our students. But is it really feasible?

Dr. Hector Perez

So that depends. If you are doing a couple of activities, maybe like pair-share compare activities or small group learning, the time investment is minimal. If you're talking about converting a module or starting a whole class from scratch and basing it on active learning, it's a significant time investment.

But we're expected to do top-notch research, top-notch clinical work, top-notch extension work. So why not invest the time to do top-notch teaching as well?

Alexandra

Great teaching is exactly that. It is an investment in our students and in their futures. Active learning engages students in the learning process. But students learn differently. So it's easy to imagine that they might not all learn best in this one singular way. How can we as instructors then adapt to those differences among our students?

Dr. Hector Perez

All the research that I've read indicates that there's multiple learning styles in the classroom. So every student is going to come with an inherent bias towards one way of learning. So you might have a student that learns best by that direct teaching method, where the instructor provides the

facts and the knowledge and the student drinks it in. And that works best for them. For other students, they might need to process information or be active when they're engaged with some type of content.

So there's all these different learning styles. So what I try to do is strike a balance between those different learning styles in the classroom. The research says there is anywhere from four to 16 different learning styles.

So when I develop a plan for a module, for example, what I try to do is from the very beginning set up activities that encompass the different learning styles so that each student has an opportunity to work in an area where they feel the most comfortable. But then also they're pushed beyond their comfort zones and expected to work in other areas that challenge other cognitive domains, other sides of their brain, and lets them experience the content from different perspectives.

Alexandra

One way of adapting to the various learning needs of students is to encourage them to become their own investigators, to critically think through how to find the answers they are seeking.

Dr. Hector Perez

Instead of me always giving them information and expecting them to passively receive the information, I try to use different strategies and methods to get them to think deeply about a topic, a concept, or an idea. So from that perspective, there's usually a lot of discussion. There's a lot of activities that take place.

Let's say they ask me a question. I might not give them an answer right off the bat. I might work with them to think about other concepts that may be related, look at those connections between what they're asking and other related concepts, and then try to help them get to the answer instead of just giving it to them.

Alexandra

Active learning does not have to be terribly complex. It doesn't have to be rocket science or brain surgery. Instead, it focuses on having the students apply the knowledge they are learning in class.

Dr. Hector Perez

Overwhelmingly, the response that I've had is that they really want to be able to do something with what they've learned. They want to take that knowledge and do something with it. You don't have to split an atom or anything like that, but you can create some simple activities that they get to use what they've learned and they can really see what the outcome of that is. I think that's really important.

So I taught a plant identification class. There is these series of modules on understanding leaf morphology and flower morphology. So I had them create a leaf book where I gave them samples of leaves that we were going to be learning throughout the semester. And we used that for other types of activities.

And then they were able to collect their own leaves and put them in their book and pressed them. And with their set of leaves, we used that to address some of the concepts that we were learning. So they had those leaves that they collected right there in front of them.

I got a grant and I bought some small digital microscopes. So they did microscope work. And oh my gosh, these are young adults, 18 to 22-year-olds. And you give them a small little digital microscope attached to a laptop, and it's like they're just back to that age where everything is amazing.

Alexandra

So active learning really seeks to help all students. But all students may not embrace it completely.

Dr. Hector Perez

It can be very challenging and very frustrating at times. There's no doubt about that. I'll be realistic-- not every student is going to be fully receptive of some of these things that you do in class. But that's OK. Like I said, I've taught probably over 1,000 students and I can count on one hand how many students have just outright rejected what I'm trying to do in class.

Alexandra

So one question remains, is active learning really worth the effort?

Dr. Hector Perez

Definitely. And I have the teaching evaluations to prove it. So it's not my word, it's the student's words. And consistently, year after year, semester after semester, the feedback that I get is that it's worth it.

They understand that it challenges them. They understand that it's intensive, that it's rigorous. But at the end of the day when they're saying things like, I gained so much out of this class, or when you see a student that you had in class a year or two later and they tell you that they still remember the concepts and they're applying them, that's where the impact really is. So it's definitely worth it. The impact is there.

Alexandra

Active learning requires thought and planning. It requires effort and dedication. But in the end, active learning does exactly what it sets out to do-- it benefits our students.

Dr. Hector Perez

Start out small, don't overwhelm yourself. It's OK, you don't have to do everything all at once. You're going to have time to keep on developing your classes. And that's something you should be doing on a yearly basis. It's a continual update.

Alexandra

Thank you for listening to this episode of the Beyond the Podium Podcast series. For more tips, tools, strategies, and resources on teaching at the University of Florida, or to find out more about future episodes, visit the teach.ufl.edu page.