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The science of this project:

We're looking at how Florida red tides impact people and vice versa – how people may impact Florida red tides. And we're considering these impacts from both a policy point of view and a biology point of view.

The Broader Impacts component of this project:

We're working with Riverview High School here in town, which has a marine science curriculum. We've done a series of webinars with the marine science students, and we've gone to the classroom to do some hands-on activities with them as well. In addition, we've teamed up with the Ringling College of Art and Design to teach their art students about red tide and then ask them to produce art projects to inspire the public to learn more about the subject.

AUDIENCE:

What are the benefits of working with this audience?

From the researcher's point of view, it makes us stop and think about how to translate our science into something that's meaningful for high school students. And we enjoy getting their feedback. We did an activity where we all talked about our career paths and how we got to where we are. And each of us was asked if we liked our job. That's important to them, since they're searching for something they want to do.

And with the art students, we love to see the products they develop to tell people about our science. Scientists don't usually think of making comic books or animated cartoons to describe what they do, but we've found these techniques to be incredibly effective explanatory tools.

And the challenges?

The first class at Riverview High starts at 7:20 in the morning, and there are 7 classes of marine science in a day. We aren't used to that sort of repetitive work. It gave all of us a deeper appreciation for the classroom teachers. It's not like when I come in early to my office when it's just me, my computer and my cup of coffee. At Riverview High, I'm on. I have to stand up in front of 40 high school students and interact with them.

How do you deconstruct your science to reach non-expert audiences?

It takes practice. Sometimes I'm teaching a class and all I get in return is a bunch of blank stares. I don't necessarily get it right the first time. You really have to make eye contact to see if you're connecting. And if not, you need to think of a different way to package it the next time around.

What have you learned about your audience from doing your BI project?

I think I've grown to appreciate the depth of both high school students and art students and what they're thinking. They're making fairly complex connections, and they're questioning their world, their environment, and the kind of environment they're going to inhabit in the future. It's cool.

PARTNERSHIPS:

Who were the members of your support team?

The classroom teacher at Riverview High has been fabulous. We've also had support from the school system's IT department to help with the webinar aspect of our project. The Ringling College faculty and staff have strongly supported our efforts too.

How did you go about designing this project and setting up your partnerships?

It's been a work in progress. We had done a few things with the marine biology club at the high school, but the focus was to have the students visit our labs. This is the first time we've gone into the classroom.

I think that building relationships is what makes a sound, strong outreach program. Our high school teacher now feels comfortable to give us feedback like, "I could see that the kids were losing interest so you'll need to enhance this or that part."

How do you balance your research with your BI activities?

It's tough. I think I'd probably like to do more BI than we're doing. But you have to keep working on the science to keep the project moving forward. Twice a year we do a review to make sure we haven't gotten too far off into the science without checking in with the kids about the next phase of the project. We do constant assessment where we take a look at where we said we were going to be and where we're at.

EVALUATION:

Did you use a project evaluator or gather evidence on your own?

We gathered evidence on our own. I've got some expertise in program evaluation from my doctoral degree. And Kate Nierenberg (who is working with me on her doctoral degree) has some formal training in evaluation. So we created our own tool.

One of the things I've learned over the years is to pilot test your evaluation tool. Sometimes you think you're crystal clear on what you're asking for feedback on, and your subjects look at you and say, "I don't get it." So we piloted our tool with a small group of high school students before we integrated it into our BI program.

Which evaluation tools did you use to collect evidence?

We used an open-ended online survey so we could get comments from the students. Open-ended questions take a lot more time to collate and digest. But I think it's really important to get feedback in the kids' own words.

Do you have evidence of the effectiveness of the project?

All 7 of the PIs on the project presented in the classroom once a week. One of the things we noticed was that by December, the students were bored with us. Their evaluations went from "cool" and "awesome" and "glad you're in our classroom" to "it was okay." I think we just burned them out. So we're going to reduce the number of times we visit the classroom next fall. That's the kind of feedback we're using to hone our BI approach.

BUDGET:

In your budget planning process, how much did you allocate for your BI activities and why?

We were at about 10% of the total budget – a figure I usually stick with for my grants. Broader impacts don't happen by accident. It takes work just like the science does. And I think you need the right monetary amount to make that happen.

FINAL THOUGHTS:

Has participation in BI projects influenced your ability to more effectively communicate?

Yes. I'm in charge of the BI on this project because I have a passion for it. I think for some of the other PIs who aren't as familiar with doing BI, they realized in the classroom, "Oh, I have to rethink how I say this or present that." It challenged them to think outside their science box and explain the concepts in a different way.

What are some overall lessons that you've learned from your BI activities?

I would encourage people to build in time to have discussions with the students. The questions they ask get your brain going in a different way. Don't just push content onto them. It's important to listen and get feedback.

ABOUT ME:

What is your research interest?

My research interests focus on harmful algal blooms, or HABs, and the human health consequences of harmful algal blooms. HABs are also known as red tides, and they're caused by little marine organisms.