

Bard Citizen Science Podcast

0:00 Josh: So welcome everyone, to the next edition of our podcast series. This particular podcast is on our Citizen Science program. We're really highlighting different aspects of our first year program. So today I'm here as always with Mackie Siebens. I'm Josh Tyler, I'm one of the Assistant Directors of Admission, and Mackie.

0:22 Mackie: Hi Josh, yes, I'm the Director of Admission, my name is Mackie Siebens, I'm an alum of the college, and we're joined by Mary, Mary do you want to introduce yourself?

0:29 Mary: Hi, I'm Mary Krembs, I'm the Director of Citizen Science here at Bard College.

0:34 Mackie: Fabulous! So, we have a couple of questions for you, to sort of get the ball rolling and tease out a little bit about what the Citizen Science program is all about. The first question is, can you tell us a little bit more about the Citizen Science program, how it originated, and why the college feels that it's an important addition to the first-year program?

0:55 Mary: The Citizen Science program actually came out of the President, Leon Botstein's idea. In looking at our first-year program, we do a very good job at deepening and enhancing our students' literacy and their ability, through L&T, and through the First Year Seminar, in engaging with deep texts. But the process and the skills necessary to engage with science, and scientific texts, are just slightly different. That transference of those literacy skills to science is something that the President felt that we needed a little more focus. So, we added this Citizen Science program to the first-year experience, to ensure that, when our students graduate from Bard College, they are not only able to handle deep literature and poetry and things of that nature, but also able to engage in an authentic and meaningful with science and scientific texts.

1:57 Josh: Mary, what are the topics that are covered during the Citizen Science program? Do these topics change over time? Or can they change?

2:05 Mary: Absolutely, in fact we recently just went through a full, complete curricular redesign. Historically, when the program first began about 10 or so years ago, we chose as our scientific topic, infectious disease. Recently, we decided to do a curriculum refresh. The Bard faculty, science faculty, particularly the biology faculty, were engaged in considering what are the current, most pressing scientific topics of the day. Climate change was the one that came to the forefront. It's a very big topic they're trying to address in a very short January intensive program, so we specifically peeled off the idea of water, water quality. This is something that all of life is required to have: clean water, but there's a lot of issues around water, not just scientific, but there are corporate issues, there are political issues, and so this is something that we felt was important not just here in the Hudson Valley, but to our global perspective. We took the curriculum and ensured it had both a local and a global focus. So, we are studying in the beginning, the Hudson River, and some of the historical and current issues within the Hudson River, but all of these ideas translate out into the global picture.

3:27 Josh: So, Mary, this program, it's not something outside of Bard that I've heard too much of other schools doing something like this. Is this unique to Bard? Or does this happen at other institutions?

3:42 Mary: So, what I've found through recruitment of faculty – interesting thing about the Citizen Science faculty, is they're brought in from universities around the world. Top universities, around the world, and they come to Bard to teach in this program. Through that work, as well as through work that I do with other universities, I've become aware, this is a very unique program. Most colleges consider how to deepen students' science literacy from a secondary education level to a collegiate level. That's been on the radar for a long time. What's unique is that the president here at Bard thought, we need to focus specifically on science literacy. There are no other programs I know, that spend any amount of time, focusing specifically, for the entire population of the college, on science literacy.

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4:33 Josh: Now you mentioned that the program happens in January – for just about how long, and generally when during the month of January does it happen?

4:41 Mary: Sure, so at the end of the fall semester, the students get to return home for approximately three weeks, between the end of their fall semester, and Citizen Science, and they return to Citizen Science for a two-week intensive.

4:58 Mackie: Great! And I have a question too, about whether or not the path through Citizen Science looks the same for every student, or if there are different classes that cover this topic, in this case water, where students can tap into different skills?

5:18 Mary: So, one of the most amazing parts of the curricular redesign, is it was not just the Bard faculty sitting alone, conversing with each other, we did a large survey of both current students as well as alumni, to get their feedback on the program, and one of the things we heard loud and clear was, they wished there had been a little more differentiation in terms of how they could get through Citizen Science. Bard students are not one-size-fits-all, we should not be providing them a program at this stage in their Bard career, that's also one-size-fits-all. So, actually in the new curriculum, there are actually four different what we call lab strands. Two of them are in your classic science labs, with pipettes and petri dishes, and two of them are what you would consider to be dry labs. So the two wet labs would be, one of them is focused on research that comes from one of our faculty members, Brooke Jude, where she is focused on a particular bacteria which produces a lovely purple color, but not only is it lovely to look at, they've discovered there are some great properties to this bacteria: antimicrobial, antiviral, and where it is located in the world, in fresh water, is of interest to ongoing active research by Brooke and her team. In this case, students could, if they're interested in doing real, ongoing live research, they can participate in doing research in the lab as part of their Citizen Science experience. The second wet lab experience was created by a different faculty member, his name is Mike Tibbetts, and in this case, we went out and sampled local water, above and below sewage treatment plants, to determine if, as humans, we are putting in things into our freshwater streams that are not being treated in the sewage treatment process. Those are the two more classic science type of labs. The other two types, for others that are not necessarily interested in continuing working in a science lab, or looking to broaden their understanding of science, we have a science communication lab. In this case, they'll be looking at pieces of science communication and doing some communication theory. Who's the audience? What's the language? What's the purpose of this communication? And they tie that back to the curriculum that they're working on, on water and water quality, and produce their own types of communication on science. What's the correct mechanism for the communication? For example, they create podcasts. Are podcasts the right type of mechanism to educate somebody on a particular topic? Or would a more visual presentation be a better mechanism? And the last type of lab that we have is an education lab. In this case, we bring groups of middle school students in from our local public schools, and we engage with them, and do work on water and water quality, and the Citizen Science students use that experience as their experiment, so to speak – no 8th graders are harmed in this process – and we experiment on how do we teach science? And how do we know what they learn? And what ways are the best mechanisms of teaching science what's appropriate and engaging for the students? So those are the four different types of paths that you can take. Tying all of the program together, however, is what we call the core curriculum, and that's where we are currently focused on water and water quality.

8:53 Mackie: Thank you! So, it sounds like there are a lot of different ways for students to explore science and science literacy in ways that sound interesting to them, which is great! Quick question, because we're doing these podcasts for an audience who may consider eventually doing Begin in Berlin, as they think about enrolling at Bard down the road perhaps, how do students who do the Begin in Berlin program, where they spend their first year in Berlin, complete the Citizen Science program?

9:23 Mary: So, the program is a mandatory requirement for graduation, however it is not mandatory to occur within your first year. There's a process of filing for, if you are on campus, and doing a study abroad starting in January, or if you've already started and are in Berlin, you simply file a deferment if you're on campus, or if you're a part of Begin in Berlin, you're automatically deferred and will participate as a second year student.

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9:49 Mackie: Got it.

9:50 Josh: Great, fantastic. So, during the Citizen Science program, are there opportunities to study, you mentioned the river, you mentioned the eighth-grade students, are there opportunities to study and work outside of the Bard classroom? And also, socially, are there activities for students during that time?

10:07 Mary: It's an interesting time of year here in the Hudson Valley. It's January, it tends to be cold, so the activities are designed with that in mind, and we see this really as a fully immersive experience, where we think about the entire student experience, not just what's going on inside the classroom, but actually how to support and engage the student throughout this entire two-week period. There are a whole wealth of activities going on in the evening, that are there to either provide stress relief, or deeper engagement. If they're having what we call "strand envy", they wish they had picked one of those other labs, they can sign up for some evening activities where they can actually go and see what's happening in the other labs. So, if they're interested, they didn't sign up for the education strand, and they'd like to try working with public school students, there are Science Night Out activities, where they can engage and go out and do that type of work. We've given the entire program an overview and a complete thought so that it feels as if you return back to home, in some capacity.

11:13 Josh: Great, great. What do you feel the future holds for the Citizen Science program?

11:19 Mary: So, I'll answer that from two different perspectives. My goal for Citizen Science – we will have done what we have set out to do if five, ten, fifteen years from now, or even immediately, an article comes across your newsfeed and rather than clicking on it and saying "oh, that's very exciting to me, I like that headline", and you immediately share it out as truth, that you take a moment to actually open the article and question the science. Is it good science? Or has this piece of communication been created as click bait? They're trying to get you to just share this along, and it's inappropriate or not scientifically valid. That's our goal, is to help deep our students' science literacy. Going forth even further than that, someday you'll be sitting in your doctor's office and your doctor may suggest this particular drug as an off-label treatment. Rather than listening to that single doctor as a scientific expert, that you have the confidence to be able to go out and read some information as to whether or not that's an appropriate treatment for whatever it is you're looking to do. This is more than just can you use a pipette and understand a purple bacteria. This really is supposed to be deepening your literacy, and hopefully changing part of the way you approach it. Going forth, a couple of years from now, every few years, we'll be revising and refreshing the curriculum. And so, because science is always an ever changing field, we are going to continue to, each year, year to year, we check the science – new study just recently came out about tap water – we'll be meeting about that to determine if it should be in January's program. But going forth, we'll be having curricular committees every couple of years to either refresh or potentially redesign an entire new curricular. Science doesn't stay stationary, so neither should this program.

13:13 Josh: Great, fantastic. Thank you!

13:15 Mackie: Yeah, I think that covers all of the questions that we had. So, thank you so much for joining us and shedding some light on the Citizen Science program. As always, any of our listeners who have questions about this or any of our other podcasts, reach out to us at admission@bard.edu, and we'll be happy to answer your questions or connect you with experts who can answer them in more detail. For now, we'll sign off, and we hope you listen to our other podcasts as well! Thanks everyone!

13:43 Josh: Thanks everyone, look forward to next time!