Jamie Shuda - Bioeyes

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Annalies Corbin: [00:00:27] Welcome to Learning Unboxed, a conversation about teaching, learning, and the future of work. This is Annalies Corbin, Chief Goddess of the PAST Foundation and your host. We hear frequently that the global education system is broken. In fact, we spend billions of dollars trying to fix something that's actually not broken at all, but rather irrelevant. It's obsolete. A hundred years ago, it functioned fine. So, let's talk about how we re-imagine, rethink, and redesign our educational system.

Annalies Corbin: [00:01:03] So, this is Annalies Corbin and I'm very excited once again for our next episode of Learning Unboxed. And we're going to talk today actually about a piece of the educational landscape that we haven't touched on yet in one of the previous episodes. So, I'm extremely excited to be able to welcome to our program, Jamie Shuda, who's the Director of Outreach and Education for the School of Medicine at the University of Pennsylvania. And what I'm so excited about is the fact that what we're going to talk about is really how post-secondary, how faculty and programs at universities are able to craft programming to give back into the community. So, that sort of public outreach and engagement component. So, Jamie, welcome to the program.

Jamie Shuda: [00:01:50] Yeah. Thanks for having me.

Annalies Corbin: [00:01:52] First and foremost, really, really sort of high level, let's start specifically with Jamie Shuda and then, we're going to get into the university pieces of it. So, tell us a little bit about your background and how it is you managed to find yourself in this role of crafting programming that's based on the work of research institutions and post-secondary, but back at the sort of community level.

Jamie Shuda: [00:02:14] So, I was doing my student teaching in third grade. I had a master's in education at the time and only took one science course. My teacher went out on sabbatical, so I was asked to finish out some of the time. And I love to teach science. I taught at a very urban school. We're a very under-resourced. But when I taught science, the kids got excited. And so, it kind of sparked an interest in me that I could be doing more engagement in the classroom.

Jamie Shuda: [00:02:46] And so, it just happened that I was dating a really nice guy who I later married at the time and his sister was doing a rotation in Dr. Steven Farber's lab. She was working on her PhD in science. And she said, "I want you to meet my boss. He loves to show off his science. And he often brings people in for

tours in his lab. And he really wants to think about how we can better do education in classrooms and connect." And so, I didn't think I was going on a job interview.

Jamie Shuda: [00:03:15] I thought I was just meeting with the scientist at a local university with the hopes of getting him to come to my classroom, right? That was kind of my need. I thought it'd be great to get a scientist in our school to talk about what it's like to be a scientist. But he started to ask me some really interesting questions. Like when I bring my microscope out to my son's third grade classroom or, you know, all the kids run to the microscope and I don't really know what to do.

Jamie Shuda: [00:03:40] And how am I supposed to get them to kind of line up and take their time? And, you know, I was like, "Oh, Steve. Classroom management. That's a real craft. And it takes a lot of practice in thinking about it, how to do that." And then, he said, you know, "And then, I want to talk to teachers and tell them like how this could help them in their classroom. But then, they talk about standards and curriculum. And I don't really know what that means." And so, him and I had this really good conversation.

Jamie Shuda: [00:04:05] His son happened to also be in the lab at the time, home sick from school one day. And so, he was also asking me questions about like what I would do. And so, from that conversation, Steve went back and convinced the dean to give him a couple of dollars for a startup. And he hired me to really think about how we could build initiatives to take his really cool science. He works on zebrafish, so it's like a big aquarium, you know, and how we could formalize this to work with schools.

Jamie Shuda: [00:04:38] And so, I was young. I didn't have a real job yet after the teacher came back to the classroom and I said, "Why not try it?" And so, I spent my first couple of years outside of my master's in education developing what is Project BioEYES, which we can talk about with him. So, he said, I want every kid to think about how he can be a scientist. And I said, "Well, then, Steve, you're not the face of it. You're a, you know, White man sitting across from me in a lab coat. Your desk is quite messy. You know, you're really all the stereotypes."

Jamie Shuda: [00:05:13] And I said, "Well, what about this? What about changing the framework to be students could be scientists because they could do science? And let's build a program and an opportunity that engages students as scientists. Not learning from scientists, but being the scientists with the support of whatever type of program that we develop." And that's been my vision for every single partnership and collaboration I've had since. So, we started Project BioEYES in 2002. I then spent some time developing it. I then—also, when I finished my doctorate in education, went back to K-through-12 and was doing this kind of on the side.

Jamie Shuda: [00:06:00] And then, I was approached by the University of Penn. They were starting an Institute for Regenerative Medicine. They were writing a research grant using the tobacco funds of the State of Pennsylvania, staking the cigarette tax and reinvesting it in research and education. And so, some scientists here wanted to start a stem cell institute looking at regenerative medicine and stem cells. And they wanted an education component and had heard me speak about BioEYES and had read some of the things.

Jamie Shuda: [00:06:29] And so, they said, "Well, listen, if you would be interested in helping us craft an education initiative for this grant and it gets funded, we would love to have you at Penn." And so, it got funded. And I'm celebrating my 10th year here at Penn. My role here at Penn has really been not only to expand our education and outreach initiatives, with BioEYES kind of being the flagship, but also really to figure out a way to make a bridge in Penn's own backyard locally as well, really, as nationally on how to engage the public in the research being done right here at Penn.

Annalies Corbin: [00:07:08] And that's really, really exciting because it's one of the things, quite frankly, you know, teachers in schools and classrooms are constantly looking for really great new things, right? And there's a lot of misunderstanding about the work that classroom teachers are willing, able, and interested in doing as it relates to what they can bring in. But it's often a very difficult to find what researchers are doing what. And as you well know, it's very, very difficult then to take that research and make it accessible into a really sort of broad array of classroom experiences.

Annalies Corbin: [00:07:43] So, one of the things that I just really, really love about your story is the fact that as a real classroom teacher who's oftentimes the other thing that happens is sort of the interface between, you know, research at a really high level and outreach and engagement is oftentimes not somebody who was trained as a teacher, right? But somebody who is a scientist who had an affinity for the public outreach and engagement, which sometimes works.

Annalies Corbin: [00:08:08] But oftentimes, it still is a disconnect between what's really necessary for the teacher to actually be able to implement or utilize the great stuff that's happening in the labs or at the universities directly into their classroom. So, you get to be not just a natural bridge, but a bridge that actually has an affinity for making that content fully accessible and usable in classroom. That's pretty unique. Do you have colleagues across the world sort of in that space or are you a rarity within both your institution and the institutional research as a whole? Because I haven't encountered very many Jamies.

Jamie Shuda: [00:08:45] Yes. Well, so Penn didn't know what to do with me, right? Here, I was this person who was not your typical researcher. I was not on your typical tenure track. However, I was doing many things that faculty do. I was teaching, I was writing grants, and getting money. I was publishing my research, right? And so, I've had to convince a lot of people. And I have to say that Penn is very supportive, especially the School of Medicine of the work that I'm doing.

Jamie Shuda: [00:09:14] They believe in civic engagement. They may not be able to articulate what good civic engagement looks like at any time, but that's my job, right? That's my job to help us understand what we want to get across, what are the most effective ways to do it, and who truly are partners in that, right? This is not a one-way street. But I think it's growing. I think this idea of broader participation. I think the idea of universities taking a stake in career and workforce development and all of those things has really been a catalyst for the work that I'm doing.

Jamie Shuda: [00:09:50] Really, it's been it's been timely. But no, I am unique and that I have my hand in both teaching as well as research. And I say to many of the researchers who will come to me and say, I'm really interested in community engagement. I say, "Well, if you can get me to understand your research, I can then help you figure out what audience is best suited for this", right? But you have to be able to take a step back from what you normally present to your colleagues. And you have to really think about what, in a nutshell, is your elevator pitch about what you're doing.

Jamie Shuda: [00:10:26] And then, how we can best articulate that to the stakeholders and partners you're most interested in, right? And that's a different conversation than saying, "Oh, well, you can just plug into something I already have." It's really, "What are you most interested—who are you most interested in interacting with? Who is your population that would best be served by learning about your research? Is it community groups? Is it teachers? Is it youngsters? Is it undergraduates who may be introduced to a new field that they haven't heard of before?" So, I think that's a unique voice at a campus.

Annalies Corbin: [00:11:04] Yeah, I think it definitely is. And, you know, the work that we do, we see this a lot in the sense that, you know, the traditional way of faculty, research faculty in particular, tend to approach

outreach and engagement is it's a box I have to click on my research grant, right? And so, that box that I click is I'm going to make a website or I'm going to do a PowerPoint or I'm going to go to some place and do a presentation, but there's very, very little thought, typically, and I want to be really mindful about this because it's not a criticism.

Annalies Corbin: [00:11:36] It's just that this is what folks know, right? And this is what has been sort of passed down from researcher to researcher, from lab to lab, historically, over a long period of time, but we've not really thought about the fact that we can take our work and craft it into very accessible program opportunities that are tied back to our research. And so, I love that that's part of what you're doing. We do a lot of that at PAST. We often find ourselves that these same university researchers come to us, "Hey, could you be our outreach piece? I need to check that box."

Annalies Corbin: [00:12:12] And I can't tell you how many times I've had that very conversation. And it was literally limited to that. So, the fact that you are able to spend time that your job actually—you know, and sort of in that bedded space has allowed you not just to help them down the road, but to have the conversation around crafting, "Hey, what is that thing that you're passionate about? What is the thing that you want to share?" That's half the battle, right?

Annalies Corbin: [00:12:39] Because, you know, researchers love to talk about what they do. That's largely not the issue. It's about how to make it accessible. So, I want to dig in a little bit, because you've created a number of programs through this very mechanism that we've been talking about that are running quite successfully. And so, I would love for you to be able to share with our listeners a little bit about some of the programs and why you find some to be more successful than others.

Jamie Shuda: [00:13:05] Yeah, great question. So, five or so years ago, I did a survey across the university just asking who's doing educational outreach or science outreach and what does that mean to you? And like you had just spoken about, it ranged from I want to be able to—I gave a talk at a science day or a career day or I judge the science fair or I build a website to—you know, I plugged into already established programming and now, I'm a mentor and things like that.

Jamie Shuda: [00:13:35] And so, I saw very quickly that the landscape looked different depending on the school that you were housed in within the university, the network you were plugged into or really, the granting agency, right? And I thought to myself, all of this is great. We can work more efficiently together. And we can think about and talk about best practices of what works and what doesn't. And so, we, here at Penn, started the Penn STEM Alliance, which our practitioners doing educational outreach that come together and talk about the very things that we think make a rigorous outreach endeavor, which we can network and share resources.

Jamie Shuda: [00:14:12] And I think that's been super useful as I had built these different programs I'm about to talk about because I can think about what has worked for many different constituents across the campus, not just my own programming. So, basically, I ran into someone in the hallway about 10 years ago, first coming to Penn. They were writing grants for the National Institute of Health, focused on epigenetics and reproductive health in women. And I was fascinated. I thought, this is really cool information.

Jamie Shuda: [00:14:43] And what can we do? And with Marisa Bartolomei and Dr. Christos Coutifaris, I wrote their educational component of their NIH grant with them. And like we had talked about, I asked them, "What research do you want to get across?" I sat in on some of their lectures and their classes to learn about it, right? So, we built the Penn Academy for Reproductive Sciences. And this framework that I'm going to describe to you has now been replicated in many different areas and departments that I've worked in, but we found that this is something that has really worked.

Jamie Shuda: [00:15:15] So, we recruit Philadelphia Public High School 10th through 12th graders to come to what we call Saturday academies, they're four academies—Saturday at programs on Penn's campus to, in a way, level the playing field for them. So, what was happening is as I was doing kind of my research on what's going on at Penn, a lot of these summer jobs and opportunities and paid research positions all went to the same type of clientele, the same type of student. And when I would approach faculty about diversifying that, on paper, I just couldn't make the case. These kids on paper just looked so much different than some of their competitive suburban and/or private school counterparts.

Annalies Corbin: [00:15:59] That was going to be my question. We're really talking about that sort of has and doesn't, right?

Jamie Shuda: [00:16:05] Yeah.

Annalies Corbin: [00:16:05] And that equitable access and opportunity.

Jamie Shuda: [00:16:08] Yeah.

Annalies Corbin: [00:16:09] Right.

Jamie Shuda: [00:16:09] So, when I'm building programs such as the Penn Academy for Reproductive Science, which we call PARS, which has now reached over 230 high school females, access wasn't enough for me. It wasn't enough to just produce some type of experience over four Saturdays, right? Some really cool things such as, you know, looking at IVF and bioethics, talking about what a stem cell is, talking about how research on the field of epigenetics has allowed us to think about what that really means to pass on your genes from one generation to another.

Jamie Shuda: [00:16:46] But it's about giving them the skills, both the soft and the hard skills to be good researchers and ask good questions. And then, I think the other main part of this was to be socially and scientifically literate, like let's provide them an opportunity to think critically about the science that we're doing, be able to form an opinion and share it in a way that is constructive. So, it wasn't just to me about just let's build a program to give more kids access.

Jamie Shuda: [00:17:16] It was about let's level the playing field for these kids so that if they go on to summer programming, we're giving them a chance to look good, but also come in having the skills to actually do something in the labs and things like that. And so, the Penn Academy for Reproductive Science started in 2010 and it teaches students about the science behind their bodies, but in a very research-focused and clinical-focused way. They learn things such as, you know, what genetics is and genetics-based labs.

Jamie Shuda: [00:17:52] They learn everything from pipetting to running a gel, to looking at data, to doing researches looking at genetic information. They actually get to look at an ML's IVF model. They interact with researchers. They also interact with clinicians who treat patients who are going under through cancer treatments, preserve their fertility. They talk about the bioethics surrounding reproductive medicine. But we also review scientific literature to look at what's good science, what should be—when we're reading an article, which—where should we be looking for that data, and things like that.

Jamie Shuda: [00:18:28] It then turned into paid summer internships. But these young women coming in interested in science had four weeks, 16 hours with us to feel comfortable about the science, to ask the questions, to learn the techniques, to know what it's like to work in a lab space, to understand the culture of

working in an environment like the Penn Medicine and to navigate the city for heat and then, to show up and to learn the soft skills about how to ask questions of your mentor and things like that. And I think that those four Saturdays prepare them to be part of a lab, not just an outsider coming into the lab.

Annalies Corbin: [00:19:11] How did you—I apologize, but how did you then translate that 16 hours' worth of experience into the actual sort of interview or the on-paper process that then translated into actually getting the opportunity? Because that's the difficult part. And I see this with programs all the time as they try to shift from, "Hey, I'm going to give you some background knowledge to prepare you", but then, how do you take that moment of, "Hey, I've now had an experience that should help me, you know, in that sort of scaffolded approach to be able to make it through an interview to get this other opportunity." That's still a really big leap.

Jamie Shuda: [00:19:53] It is. It is. So, I think there's two sides to that. One, for the student, they build they a network within the PARS community that can help them, right? So, review their essays for other programming, right? After the four Saturdays, they have to be able to articulate the research that they've done or the experience that they've had at PARS. It's not enough to say I had a really cool experience at Penn. We practice, what was that experience? What did it teach you? What did you learn?

Jamie Shuda: [00:20:21] So, we're helping give the—enabling them to tell their story in the most way that would be a competitive way, I guess you can say. It's also confidence, right? So, they got into a Penn program. They've followed—they've come voluntarily for four Saturdays. During that, were instilling them the confidence that they can do this stuff, that they can do this work, that they can pursue a career. And so, that helps them in the interviews. They now have something to talk about. They now have an experience that they can share, that gives them the confidence for that.

Jamie Shuda: [00:20:56] I would also say letters of recommendation. You know, if you came here and worked hard for four hours, we can help you by helping you make those connections and recommend you. We can advocate for you, right? Because we have within the university and the Greater Philadelphia community a network within ourselves, then I can say, "This student has everything, you know, please consider her or him." So, that's really important. I will say that in our application pools, we also give feedback to students whether they get in the program or not.

Annalies Corbin: [00:21:28] That's great.

Jamie Shuda: [00:21:28] So, if a student does show a genuine interest but just does not come through in the way they have produced their essays or if their letter of recommendation wasn't necessarily reflective of what they saw, it said in their essays, we tell them. We say, "Hey, listen. Go out and talk to more teachers or find that advocate for you where-" You know, if we're asking for 500 words, you know, 17 is just not going to do it, you know. And so-

Annalies Corbin: [00:21:56] We went all 500.

Jamie Shuda: [00:21:58] Yeah. So-

Annalies Corbin: [00:21:58] Yeah. There's just real struggle with that. And that's really, really important and I love the fact that you've built in that real-time mentoring to them. That's a huge, huge piece, I suspect, of the success that you're having.

Jamie Shuda: [00:22:12] Oh, for sure. And it goes on for years, right? The students that are really interested in pursuing these types of careers, you can identify them and you can support them as much as they want to be

supported, right? And then, I will say, on the other side of it is breaking down the challenges and barriers for scientists to host students who would be part of these programs, right? So, if a postdoctoral student or a graduate student or a faculty member wants to volunteer in these programs, I can then get them to see and experience the talent in our own backyard, right?

Jamie Shuda: [00:22:50] And I can then open the doors in many other opportunities outside of just, say, PARS or its sister program, PASH, which is the Penn Academy for Skin Help. So, it's a very similar vehicle. Just now, we're focused on dermatology. And so, it works two ways, right? These are kids that, maybe on paper, because they're not coming from the school districts that are the most prominent or, you know, doesn't mean that they can't do this, right? And I believe that all people believe that. But then, to actually see it in action helps me make the case for these schools and students even more so. And so, I think it's a win-win for everyone.

Annalies Corbin: [00:23:33] It is a win. And like I said, we see some similar pieces in terms of the way, you know, that when we have the opportunity to give the students the background knowledge they need, they grow the confidence. They're not afraid. In it, they're not afraid to ask questions because they all have them, right? And typically, what you see as kids get started is they're just afraid to ask. They don't want to look stupid, right? And that's their own internalizing it, but it's very, very real for these young folks.

Annalies Corbin: [00:24:01] And so, you know, being able, A, to give them an opportunity to practice and to try, to grow their confidence, to have that, you know, real-time live mentoring as part of the process, you are setting those kiddos up for success. But I also love the flip side. And this is one of the reasons why I really wanted to have this conversation with you is I love the fact that you're working so diligently with the researchers as well, right?

Annalies Corbin: [00:24:25] And so, you're literally mentoring both sides of this equation or this problem. You know, the young folks who are hoping to be able to move into these, you know, career opportunities and those who are established in that space to make their work, their research, their science more accessible. So, it's an amazing endeavor. And so, good on you for that piece of work, because like I said, you know, we struggle.

Annalies Corbin: [00:24:53] Research institutions come to the plethora of organizations that are doing amazing things all over the country and around the world, you know, asking, "Hey, help me with this outreach component piece." And some of those relationships that get formed turn out really great stuff. But a lot of them just turn out okay stuff. And I don't know that it makes a huge impactful difference in the communities that could have benefited from the opportunities having been crafted with a little different sort of point of view from the get go.

Jamie Shuda: [00:25:26] Yes. And I'm a bigger advocate for thinking about institutionalization, right? So, it's not enough to say I want to engage the community in my three-year grant, right? I think it's important to think about it from an institutional perspective, how do we build sustainable partnerships? And what does that really look like? And so, when I'm working with teams to develop projects and programs, I'm always thinking about, "Well, can this sustain itself regardless of the funding?" Right?

Jamie Shuda: [00:25:59] And obviously, many people, including myself, know that there is a budget line and we need to make sure that we have those budgets and we work—and I work very hard at making sure that the funds are there to do the good work. But also, if faculty and administrators buy into this work, we can always find a way to do something, right? And we can build on it. And so, you need to have that partnership at the onset and those discussions at the beginning.

Jamie Shuda: [00:26:30] And those that are willing to do that and work with me, I know, have a genuine interest in doing this stuff and we'll be able to produce something that's sustainable. And then, we can only grow when the funds come in, right? We can always do big things. So, I often approach different departments and programs and say, "Can we just have a community outreach 101 session?" Right? Let's just get the conversation started. And then, the people that come to my office after this are the people that really want to engage in this work.

Jamie Shuda: [00:27:02] And they may be thinking of a grant down the line for sure, but if we get that conversation started now, the more we can think about how it will play out in the short-term, but also in the long-term. And even when there's gaps in funding, if there's faculty invested, if they see the potential for outcomes, if it provides a teaching mechanism for their own students in the lab, usually, we can continue the great work. And that's what I'm looking for here at the university. And I'm just fortunate that people understand this and buy into this as it's now kind of, I think, gaining some momentum.

Annalies Corbin: [00:27:46] Yeah. Well, and I think that there's such an appetite for it. You know, like we talked about right at the beginning, you know, there are these amazing teachers all over who are looking for ways to bring in new and relevant content for their students and who are also, you know, quite frankly, really looking to figure out ways to help inspire their kiddos into whatever that career that they're going to find themselves and down the road. You know, the kids don't necessarily know what's out there.

Annalies Corbin: [00:28:12] You know, they're going to think, you know, a medical school and think, you know, a doctor or nurse, they have no idea the breadth and depth and possibility or the research that's happening at some medical school and that there are so many different pathways within that institution that might be the one that truly, truly sparks them, right? And so, they do struggle to figure that out. And so, these programs are key to being able to help both sides, both the research side and the longevity of the programming and the field and the research itself. But at the K-12 side is a mechanism to help inspire the next generation of research scientists. So, that's absolutely awesome.

Annalies Corbin: [00:28:52] One of the things, Jamie, that I always like to do as I sort of wrap up the program is to sort of help folks who are sitting back at home listening, saying, "Wow, that is really cool, but I'm not in the neighborhood of the University of Pennsylvania. And I don't really necessarily have direct access to the stuff that Jamie's doing, but I have another institution down the road." So, if you are that teacher, a high school or middle school teacher and you would really love to engage with your post-secondary institution, a true partnership, not just a, "Hey, come fly by and do a talk for my kiddos", how would you—what would your last sort of lob to these folks be, that piece of advice about, on a K-12 side, how do you get started?

Jamie Shuda: [00:29:36] Yeah. So, I think teachers always have the best ideas. And so, people on the university are in tune to what students are gravitating towards, right? And so, I would urge a teacher to really think about what would be the spark for their students and share that idea with the scientists that you're most interested in. Asking a scientist to come share their science is somewhat intimidating, right? Because it's not the audience that they've had.

Jamie Shuda: [00:30:09] But to say, you know, "My students are really interested in coding right now, like they've talked about coding or there's certain apps that I see them always wanting to use. Would you be willing to come in and share what sparked your interest into this field or how did you get into this field? Tell me your story." I think that that's really interesting to scientists because they're asked about their science all the time, but not really asked about them.

Annalies Corbin: [00:30:37] Right. Well, that's true.

Jamie Shuda: [00:30:38] Yeah. And so, that's a really great entry point into discussion, right? Could you tell us a little bit about what you're doing or how you got there? And that may be easier for more people than actually translating their science into the audience that that teacher may have. So, I would urge them to think about what's of most interests for their classroom and the students sitting before them. And then, how—finding a connection with someone who has a career path that somewhat aligns to that and asking them how they got there and telling their story. I think that's great.

Jamie Shuda: [00:31:13] I also would urge teachers to reach out to graduate student organizations, too. So, some time—yeah. So, there's so many graduate students and even post-docs who are thinking about alternative careers outside of bench research. And so, often, I help them find opportunities to explore that a bit further, even while they're here working at the bench at Penn. And they are just—you know, they can't wait for these opportunities. And so, looking for graduate student groups and postdoctoral organizations and asking if they're willing to do something with their class is a great start. And you'll probably find a lot of bites there.

Annalies Corbin: [00:31:56] That is really fabulous advice. And I haven't had anybody throw that out before, so I truly, truly appreciate that. Jamie, it has been a real pleasure. And I thank you so much. Not just for the conversation today, but quite frankly, for the work that you do. And I know that for our listeners, we're actually going to do a follow-up segment specifically about one of the programs that Jamie mentioned, BioEYES that she's running. And we're actually going to try to get that coordinated both with Jamie and with classroom teacher who—or so who has been implementing it. So, it'll be an episode to follow. So, stay tuned for that. And Jamie, thank you so much for joining us today.

Jamie Shuda: [00:32:35] It was my pleasure. Thank you so much.

Annalies Corbin: [00:32:38] Thank you for joining us for Learning Unboxed, a conversation about teaching, learning, and the future of work. I want to thank my guest and encourage you all to be part of the conversation. Meet me on social media at Annalies Corbin and join me next time as we stand up, step back, and lean in to re-imagine education.