Zaheen: Hello to everyone joining us today. My name is Zaheen and I am a writing center tutor at DePauw's Academic Resource Center. This podcast episode will feature a very special guest, Dr. Lynn Bedard, biology professor here at DePauw University. Today we'll be asking Dr. Bedard a few questions regarding her writing experiences, especially in the sciences. So, Professor Bedard, could you give us a brief introduction about yourself?

Prof. Bedard: Sure. Hi, Zaheen! I'm so glad that we could chat about writing today. So my name is Lynn Bedard. I have been teaching at DePauw since 2005, so this is my 16th year. My primary courses are Microbiology and Molecular Biology with Bio 101 as my introductory course. So, my PhD is in microbiology, and my research interests involve gene expression regulation, and I use the model organism of yeast.

Zaheen: Thank you. So, despite being a biology professor you're also a professor for a class [called] Epigenetics--which is a great class by the way-- *(Prof. Bedard: Thank you!)* that offers a writing competency credit. How did you come to teach this class in particular?

Prof. Bedard: So, I've always enjoyed writing, and the epigenetics topic came out of, kind of an offset or an offshoot, of the research that I do. So, my research on gene expression deals with histone proteins, and so modifications to histone proteins, as you know from class, are really important in determining whether a gene is turned on or turned off. So, epigenetics is just a sort of, it's a subfield of genetics, which I've always found fascinating, and it fits in really well with the molecular side of research that I do. And so we were looking for writing courses in the department, and I actually started teaching this course, now that I remember, with Janet Valia as a Ho-Scho [Honor Scholar] seminar course. And then I adapted it from the 300-level seminar style to a 200-level writing intensive course for the department.

Zaheen: Awesome. How do you balance teaching both the scientific background that's needed for epigenetics with essential writing skills?

Prof. Bedard: That is a really good question and one that is probably the biggest challenge, because students take this course and do get credit in the biology major. So, it will count towards all of our majors. So, as a biologist, I have to have *enough* content present to make it worth getting a whole academic credit, right, but we can't cover that amount of material when we're also devoting time to peer review writing conferences, writing in class and all the other things that we've done. So, basically, content gets tossed and I don't worry as much about it because it's [a] 200-level [class], so it isn't an upper level elective where everyone has to take it; it's an elective, right-- you don't have to take it if you don't want to. So, I have the freedom to reduce the amount of content in order to make room for the writing. That's another reason that we do quizzes instead of full exams, [for example], because really the focus is on your ability to become more proficient at different types of scientific writing.

Zaheen: Yeah! Speaking of scientific writing, how important is writing in the sciences and STEM in general, since people usually associate science classes as more, "oh, you need quantitative reasoning, you need math." Why is writing also important?

Prof. Bedard: So one of the major ways that scientists communicate their findings is through writing. And that's a very specialized type of writing, you know, writing a research paper or writing in a primary data paper. So, we don't really do that in this class, but you will do that if you take 300-level labs in biology. So, being able to write about complicated scientific issues in a clear manner is really important. So, I think part of, we've talked about it in class, the concerns about getting information out to the general public in a format that they can understand, because they haven't had the opportunity to take these classes, that it's really important to be clear, succinct and convincing, you know, reputable and convincing *(Zaheen: Right.)* So, it is super important. So, of course for the professional scientists, that's how we make our living, right. We read, we write papers, we read papers. And then for students, being able to communicate those complicated ideas in a written way is what I think is really important.

Zaheen: Yeah, no, definitely. Especially with students, this might be their first time, like ever, being in a course like that-- where they're given the opportunity to write about what they learn in sciences. I think it's very common to just kind of learn things and then apply it to [things] like a quiz or an exam, and then just not know how to communicate it to those who don't have that prior studying or knowledge that they have. *(Prof. Bedard: Yeah, definitely.)* Yeah. So, what kind of writing do you do specifically, like, most often.

Prof. Bedard: So, depends on what stage of your scientific career you might be in. So, teaching at DePauw-- I primarily teach. So a lot of the writing I do is like writing exams and writing quizzes and writing up lectures or slides for classes. So, even though it's not a form- it is a formal product, [it's] not quite the same thing people think about when they write. In my sabbatical research that I've done, they are primary data papers that I'm participating in writing. So, writing up experiments, the results, hopefully getting them to be published. And then, other forms of writing-- I don't journal a whole lot, but sometimes I do, and so that's another form of writing. And it's something that I recommend to students and under particular times of stress just getting things, writing them down on paper is, I think can be helpful. And, I'm a list maker, and, so, you know, and doing that sort of thing keeps me sort of organized. But teaching, it's mainly-- oh! And like writing letters of recommendation, that's another major form of writing that I will do on a regular basis.

Zaheen: Yeah, it sounds like you incorporate a lot of different aspects of writing into your professional and also daily life. So, when it comes to scientific writing specifically, what is usually your writing process, and how do you alter this process when it comes to different forms of writing?

Prof. Bedard: Sure. So, in the lab, you're doing a series of experiments, and it may be months, years, even. But, on a more regular basis, you are writing down what the results of your experiment were and hopefully, at the conclusion of an experiment, like what I will do is I'll take a page of my scientific lab notebook and I'll write out, “Okay, so we did this, I did this, and this is what it means, this is where we want to go next.” Just to have [a] sort of markers that I can go back to, to refresh my memory. And then, the process of writing the scientific paper is really fun.

I don’t know, maybe not, maybe not so much fun-- but, we're, you gather all your background information to write your introduction. You remember the methods you did. Write out all the details and all the reagents you use, and then you start looking at your data figures-- so have you put your data together in panels, and then you start writing your narrative off of that. And once that is all done, then you can write your discussion. And so sort of summarizing what you did, what you think it means, and what you think you need to do next. And then, the very end is putting the abstract together. So, that's the way that I have done it in the past. Different individuals teach how to write a scientific paper very differently. So in graduate school, my, my thesis advisor would say to me, “Okay you got to write this up, you know, write on your paper.” So, I did all that, put it all together, handed it to him-- it was like a physical paper at this point, this was a couple of years ago-- handed it to him, and four months later, he's like, “Here's your paper,” and I'm like-- *(Zaheen: four months?!)* Yeah, so, he has a lot going on. *(Zaheen: Yeah)* But, he also there was no back and forth. There was no partnership in the editing process. It was, “Okay, these were your thoughts, and here is what you're going to submit for your paper.” *(Zaheen: Yeah).* Now I was a graduate student, so, you know, [I] wasn't, you know, the-the most competent in scientific writing at that stage, but it was really for me kind of disappointing that I couldn't learn. All I could see was, oh this is what I wrote, and this is what it became. There was no back and forth. So, in my postdoc, the advisor that I worked with wanted me to be an editor on a couple of manuscripts that another postdoc had written, kind-of, sort-of, he had done all the experiments but he didn't want to write them up. And so, we had this *very* collaborative process where I would type up a draft, send it to her, she would write all over it, send it back to me, and then I would incorporate all the suggestions seeing you know sort of where it was going. And then, I would send it back, and, so we did this. It was *months* of revising and revision, but I could see the development of my writing along the way, which was really helpful. And like I said, maybe that's what my thesis advisor would have done if I had been a postdoc, if I already had my degree, but it seemed like a lost opportunity, you know. Because, yes, he was very good at what he did, but there was no *teaching* me how best to do it.

Zaheen: During your postdoc, did you ever, like, talk to them one on one, or was it just through [emails]?

Prof. Bedard: Oh, yeah, no, we definitely would sit down and, like, on a weekly basis, we're trying to get the papers out, and I'd be like, “Okay, so you want me to say this here, where?” and like, “I thought we've said we meant this,” and you know, so it was definitely, like I said, more collaborative.

Zaheen: Yeah, so collaborative writing is a lot better than just someone having, like, someone dictating kind of. (*Prof. Bedard: Right, yeah, yeah.)* Yeah, I think that's kind of like a common theme that a lot of writing tutors specifically and also just writing associates or people helping with writing, I, I've noticed. Like even professors, they'll have, like, discussions with you instead of just like, marking everything and then saying, “Oh, change that,” without really explaining why. *(Prof. Bedard: Yeah.)* Or like, even asking questions like, “Oh why did you write something, this way instead of this way.” *(Prof. Bedard: Mm-hmm, Yeah.)*

Prof. Bedard: Yeah, so, it's definitely, I-I think it's more helpful [for it] to be a developmental process than a transactional. *(Zaheen: Definitely.)* Rather than, "I give you the paper, and you give me back what it should be."

Zaheen: Yeah, yeah, so, it sounds like you also, like, talk to a lot of students about their writing, like when you have writing conferences for example. So, from your perspective, what aspects of scientific writing are more daunting for students and how do you suggest they handle these fears?

Prof. Bedard: So, it *can* be really-- so, it depends on what the assignment is. So, if it is a lab report, which is a different form of writing, versus, like, the historical narrative that you're-- that you're doing for our class. So, I would say, I am an outliner. I like to have an actual outline of, like, what I want to write about, like what am I going to say in this part, this part, in this part. And not everyone is comfortable with doing that or wants to do that, but I think part of any writing assignment is just that activation energy barrier, right, where you're like, "I have to write a five page paper, I have to do this lab report," and you just don't know where to start. *(Zaheen: Yeah).* So, I think having at least a general outline is a good way to begin the process, and then it won't seem as intimidating of, "Oh my goodness, I need to put five pages down right now." You know, if you have an outline of saying I'm going to talk about this, this, and this, then you can fill those in, sort of, a little bit at a time. So, lab reports may be a little bit easier because you're already told you have to have an introduction, you have to have this. So, it's just, maybe, just having the motivation to want to start it, you know. And so, what I do in my upper level courses that do lab reports, I actually have them, sort of, do the first half of the semester is-the first part of their paper, and then they edit it, and build on for the rest of the semester. So, it does become more like a real scientific paper, rather than the ones like you did in Bio 101-- (*Zaheen: Yeah.)* --where you just do an experiment and turn in a report. This is meant to, like, build on top of previous weeks.

Zaheen: Yeah, so, it sounds like, definitely outlining and templates. *(Prof. Bedard: Yes! Those are good!)* And that can be very applicable to all sorts of writing, not just scientific writing. *Prof. Bedard: Yes, yes.)* So, speaking of just, like, writing in general, what's your most memorable experience with it?

Prof. Bedard: So, one of them is that relationship, that I developed the writing relationship with my postdoc advisor, but another one I was thinking of, so, in high school, we had, we had a daily newspaper, but I wasn't involved in that, but we had a yearbook-- so, I don't even know if they do your books anymore? *(Zaheen: They definitely do!)* Okay! So, I was on the yearbook staff, and [in] my senior year, I was one of the editors of the yearbook, and we went to a yearbook competition *(Zaheen: Wow!)* Which they had, and we got to travel. I was from Chicago, we got to travel [to] St. Louis, and it was really fun, because we're like, you know, 17 year olds, and they gave us a little bit of freedom-- *(Zaheen: Yeah!)*-- so, you could, like, explore, you know, St. Louis. But there was a writing competition, where it was like speed-writing, where they gave you a topic and you had to come up with your copy-- *(Zaheen: Wow!)* --in, like, an hour. And I won an award-- *(Zaheen: Wow!!)*-- and I, *(Zaheen: That's awesome!)*--

was like, that's really cool! So, my mother immediately thought that I was going to be a writer. She's like, “Well you should just go be a writer,” and I'm like, “Eh, that's not really what I, I don't see my life doing that.” So, but it was really fun, and it was a positive experience, so it's like, “Oh, I really *can* do this, so that sort of early positive reinforcement, you know, because you do yearbook and, like, people like it, or they don't, or they don't even need the copy, right, but to have that sort of situation. So, that was probably the most memorable-- that and finishing the thesis! *(Zaheen: That definitely sounds very memorable!)* So, to be honest, that one [the thesis] was so much like, “Ugh, I've already graduated, I just write this up,” so, you know, that one wasn’t much fun.

Zaheen: So, like kind of feeling the validation-- *(Prof. Bedard: Yeah!)* --for hard work is very memorable, yeah. So, do you ever feel discouraged as a writer and what do you do to motivate yourself?

Prof. Bedard: So, yes, in times when you're trying to edit a paper, and, so, you-you've worked on it for a long time, and other people, your collaborators have worked on it, and then you send it out for review. *(Zaheen: Yeah.)* And then, it's usually peer reviewed by three people, and, it’s like, anonymous, usually we don't know who they are. And “reviewer two” always comes back and you're just like, “Did you read my paper?” So, you know, it's just and it's this thing, like, you can you can go like, “What is reviewer two gonna say about this?” There's this, this, just every one of [the] papers that gets reviewed, there's a reviewer that just doesn't like it, or doesn't get the-doesn't think it's important, or doesn't quite “believe” your data, and so, that can be a little frustrating and discouraging. *(Zaheen: Yeah)* But, you just, you hope that by addressing their comments, if at all possible, if they're, you know, you *can* address them, then you've done your due diligence and they will hopefully accept it, right, it's up to the editor at that point. But, you know, just having conversations with peers, or collaborators or mentors, depending on what stage you're in, and just talking about that, like saying, “I'm stuck on this aspect of it and I don't quite know how to do it,” then having just bouncing ideas off of another person- *(Zaheen: Yeah)*- can be really helpful, or in your situation, of going to a writing tutor, to have somebody else's eyes read over it and say, “You know, this looks really- this makes sense to me, so where's the disconnect- *(Zaheen: Yeah, yeah.)*- between maybe what your professor is telling you and what you know I can see here.”

Zaheen: Yeah, so having, like, open conversation, and posing questions that you actually *want* to hear the answer to and not being like, you know, a little condescending about it.

Prof. Bedard: Oh right, yeah. And so you have to trust those people, right- *(Zaheen: right)*- you have to have that relationship, where, I can go to that person and say, “I'm struggling with this idea, I don't know how to write about this,” and being, you know, confident that they're going to not, like you said, be condescending and be like, “Ugh, how do you not know how to do that- *(Zaheen: Yeah)*- kind of thing, which, I *hope* that does not happen very often.

Zaheen: I also hope that doesn't happen, but it's worth mentioning. *(Prof. Bedard: Sure! Yeah.)* Yeah. So, that was all the questions that I had for you. Thank you so much for your time today Dr. Bedard and to our listeners, thank you for tuning in.