

The Practice of Science Communication: Teaching Science to Dog Trainers

Jessica Hekman (hekman2@illinois.edu), May 14, 2017

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I designed and taught multiple online biology classes and webinars, as well as lectured in person at a conference (see complete list below), all designed for audiences of dog trainers, dog lovers, and animal behavior consultants. My initial goals were to provide instruction in some of the basic sciences for a population who often sorely lack some fundamentals that are important in building understanding of more complex subjects, as well as to provide an opportunity to learn about those more complex subjects, which are more directly relevant to their practice. The fundamentals that I saw as important and that I felt equipped to teach were aspects of endocrinology, neurobiology, genetics, and immunology, as well as how to read a scientific paper and how to think critically about scientific issues. I structured the classes around reading materials available freely on the web (hoping to help students find online resources that they could return to in the future), online discussion, and short lectures from me.

I've learned a *lot*. My first online courses were well received, but I felt that students weren't absorbing the material. I required a weekly essay as part of the course structure, and found myself frustrated at the level of misunderstanding of the content these essays revealed. I also found that students' expectations about how to approach such an essay differed widely from mine; I expected a summary of what I had taught, and they often described cases they'd seen which I perceived as having only tangential relevance to the class. I struggled with how to give feedback that wouldn't be seen as criticism; after all, students were just passing through these short classes and didn't have the time to learn about my expectations or how to structure their essays in more academic fashion.

To solve this problem, I restructured the classes. Instead of requiring essays in response to specific class-related questions, I required students to write two questions a week about the material (if they felt they understood it well, they could ask about topics they wanted to know more about). The students' questions did a much better job of helping me see where

problems lay and had the added benefit of giving me an opportunity to engage in discussions with the students instead of dropping criticism down on them from on high. I also required a weekly reflective essay: what did you learn, and how is it relevant to your practice or your relationships with animals? The essays helped me understand what parts of the class the students found useful and what parts they found confusing. I continue to receive very enthusiastic feedback from students, who seem to really enjoy my courses. I'm still not sure how much of the material my students fully understand or retain, but I am confident that they are exposed to new ways of thinking about the world and that they are getting excited about science. My favorite piece of feedback came from a student who reported that when she heard a story about neurobiology on NPR on her car radio, she listened instead of switching the channel, and found she understood and enjoyed it with the help of my class. Wow!

However, I'm still struggling with how to engage with students in my offerings on basic science. I get great attendance on the more complex topics, such as "The Genetics of Canine Aggression" or "The Biology of Socialization." But I get really terrible attendance on the basic science topics, such as "DNA: The Basic Blueprint of Life" or "How to Read a Scientific Paper." To me, it's obvious that understanding the basics of DNA is necessary for a more than superficial understanding of the genetics of canine aggression, and that you should learn how to read a scientific paper before citing one to win an argument in an online forum. Nevertheless, student enthusiasm is low for these offerings. I believe that if I can't explain to someone why my class is relevant to them, then it probably isn't actually relevant to them. But does that mean I should stop offering these basic science classes and seminars? I can't believe that's the case – the people who *do* take them report that they learn a lot from them. I think the problem may be that these basic topics are not perceived as immediately helpful to people as something that can be directly applied to their practice, and people just don't have the time to go back to the basics with science when their schedules are full with fires that have to be put out right now.

My plan is to try reworking these classes to make them more obviously relatable. One seminar I offered on reading a scientific paper was attended by only five people, whereas

the previous day's seminar with a more enticing topic had drawn in over a hundred. At the end of it, one of the attendees told me, "The paper you walked us through was so interesting. If you had just called the seminar 'Research on whether you should spay/neuter your dog,' you would have had many more attendees, and you wouldn't have had to change the content much at all." I'm considering offering a series of webinars, requiring less commitment than multi-week courses, each focusing on an interesting topic, but working in related basic science as part of the understanding of that topic. This should draw in an audience and provide the basic science in a more palatable fashion. But we'll see – maybe I'll write a book instead.

Project details

- Online courses (3 weeks) taught for the Association of Pet Dog Trainers (APDT): Introduction to Genetics; Behavioral Genetics; Hormones and the Brain; The Brain and Behavior
- Seminars (3 hours) taught in-person at the APDT 2014 conference: Testing the Tests; Shelter Behavior Assessments; Demystifying the Scientific Paper
- Online courses (3-4 weeks) taught for the International Association of Animal Behavior Consultants (IAABC): DNA: The Blueprint of Life; Heredity: Passing Genes from Parent to Child; From Domestication to Inbreeding: Population Genetics and Companion Animals; Behavioral Genetics in Companion Animals
- Online webinars (1 hour) for the Pet Professionals Guild (PPG): The Genetics of Canine Aggression; The Biology of Socialization; Puppy Vaccines Explained