

From a Student to an Animal Scientist: Effective Tools for Reading and Writing

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Abstract

Learning how to read and write effectively as an Animal Science major can be quite a challenge. Professors like Barry and Orth (2013) are two of many who have emphasized the importance of developing good reading and writing skills for future employers. Many Animal Science students, like myself, do not come to college with the expectation of learning how to improve their reading and writing skills, given that science is the main focus. This article provides ideas for students in the Animal Sciences and how they can incorporate these into their reading and writing. I interviewed two Animal Science professors that both incorporate reading and writing into their courses. The interview consisted of questions that further dive into understanding why they incorporate reading and writing, their expectations from students regarding these subjects, and what advice they would give to students who want to read and write more effectively. With this interview process, I hope to find answers so that I can provide incoming students with the tools they need to become successful Animal Scientists.

Introduction

As a new Animal Science student stepping foot in Davis, you might be feeling nervous and wondering what to expect from your academic courses. Reading and Writing will be especially important and greatly emphasized throughout your time as an undergraduate. Some of you are probably starting to feel nervous about this process and have a lot of questions to ask. With this article, I plan to provide you with multiple tools and hopefully answer some of your questions so that you too can become an effective reader and writer. Given that reading and writing are essential tools that employers look for, your courses will serve as a place for practice and growth (Barry & Orth, 2013). I understand that reading and writing may not come easy for some individuals and may sometimes feel very overwhelming because you do not know what to expect and the unknown can sometimes be scary. By the end of this article, I hope that you can appreciate some of the academic reading and writing that will be introduced to you and hopefully ease your transition as you come across strenuous challenges with scientific reading and writing.

You might ask, “So how can I be an effective reader and writer?” Well the simple answer to that question is understanding what you are reading and understanding the prompt of your written assignment. Your future and current professors have created written tasks not to give you busy work, but rather, they aim to help you improve as future scientists. These written assignments

will help you develop critical thinking skills and a better understanding of course material by which you will synthesize your ideas onto paper. It is important for students to critically evaluate reading material that is associated with course concepts and complete writing assignments related to the reading material. This process has been shown to improve reading and writing skills as well as the retention of course material (Barry & Oath, 2013). Most incoming college freshman have different strengths and weaknesses when it comes to reading and writing. Luckily for you, your college journey will allow you to improve in all of these areas. Because reading and writing go hand-in-hand, we will start by examining a common reading material you will be asked to utilize as an Animal Science student. Next, we will continue to discuss how you can utilize reading materials as a source for scientific writing and examine the common assignments you will see with each writing task.

Methods

To provide you with the most credible and insightful information, I have interviewed two professors who work in the College of Agricultural and Environmental Sciences at the University of California, Davis. The first interviewee, Kristina Horback, has a doctorate in Experimental Psychology from the University of Southern Mississippi and works in the Department of Animal Science. The second interviewee, Russ Hovey, has a doctorate in Animal Science from Massey University and also works in the Department of Animal Science. I asked these two professors about their reading expectations and types of writing assignments that students will be expected to complete. Simultaneously, I analyzed secondary and primary research articles that provided tools for reading and writing in the Animal Sciences. The research articles that I collected were all published in peer-reviewed journals.

Discussion

The most common reading material assigned to Animal Science students are research articles. These are published reports of data collected from primary research which include a full introduction, materials and methods, results with tables and graphs, discussion, and sometimes even a conclusion section (Perneger & Hudelson, 2004). Not only does this allow for researchers to communicate with other researchers about their findings, but it also provides students like yourself a gateway for understanding complex topics and how this research might be used in the

future. From experience, I know that many of your current and future instructors will expect you to include these in your writing assignments. However, only some instructors will really take the time to guide or help their students become familiar with reading research articles.

What Should You Be Thinking About While Reading?

When reading scientific literature, you work to identify all of the objectives made by the researchers so that you can better understand how their findings tie into related discussions in class. According to Drake, Acosta, and Smith Jr. (1997), the Japanese KENSHU method has served as a helpful tool for high school, undergraduate, and even graduate students in the U.S. engineering curriculum. The authors suggest that this has allowed for students to read research articles more confidently and help them better understand the paper's purpose. The Japanese method KENSHU simply means research understanding and was developed by modifying a system used at a top Japanese national university. The idea of the method is to divide the research article into sections, read and discuss these sections with an experienced peer, and translate the sections into a summary. This summary of the article will include key findings and data. Essentially, you are reading to understand the article by analyzing it and by noticing words that you might not know. This might even require you to highlight unknown words and then going out of your way to simply Google the word.

As you continue to advance in your college journey, scientific articles will become more advanced, and reading will become more of a challenge for you. Improving your reading techniques will be a necessary step so that you can apply your skills to your current and future Animal Science courses. These reading skills might include asking questions like, "What is the author's purpose?" "What are the key variables used?" "How are they measured?" "What are the most mind-blowing results?" and "Why is this work relevant?" Other skills might include highlighting words that you do not understand and defining them as you read along. By asking the right questions and further comprehending the text, a student like yourself will not only be able to identify critical points but will also be able to cite research articles properly in your own writing.

Another important variable to consider when reading scientific articles are the multiple steps the authors make throughout their study. This will help you better understand their findings, and in doing so, can help you recognize whether or not their findings are valid or not. Reading this

way becomes an opportunity to critically think about and evaluate different types of reading materials.

Kristina Horback, a professor of the Animal Sciences at UC Davis, explains how reading allows for students to be critics in the Animal Sciences:

You need to carefully absorb the information within research reports and journal articles and then be able to critique any piece of science that you are reading...I think that students should look at the abstract first and ask multiple questions throughout their reading process (What? Why? How?), but I would suggest that students carefully examine the methods section to see how the authors went about doing their study. Personally, I do not spend a substantial amount on the statistics, because the main purpose is to find the author's big story and then look at how they are defending their results.

Another Animal Science Professor at UC Davis, Russ Hovey, also agrees that students should be critically analyzing scientific papers, but they should also consider questioning the author's findings:

Scientific papers contain data and in this world of fake news, like with anything else, the best thing to do is to go back to the source...If you think about what a scientific paper is, it is a reflection, or a summary of a collection of data done by somebody. You can then access their study and expect to get some information from that. As scientists and readers, we expect you all to go back to the raw data and pick apart any scientific paper...You should always question what the researchers are saying and it's okay not to always trust researchers 100%, because the goal is to have you all go out of your way to see that other people are also doing this same type of study. Or maybe they are not, and this could lead to a variety of questions and thus create a catalyst for discussion...A good Animal Science student will want to learn more about a study and will always find ways to question it...Being able to read scientific papers is a huge social responsibility for all Animal Science students, and I don't think we, as professors, have emphasized that enough.

Both professors emphasize the importance for students to attempt to uncover *how* the authors found their results by critically analyzing their steps and asking the right questions. This effort to

uncover the truth and validity of scientific papers is what makes reading an essential skill for students in the Animal Sciences.

What Kind of Writing Will You Be Assigned to Write Yourself?

Much of the writing you did in high school was only completed as a requirement for your English courses. As a new undergraduate student, you will realize that most of your Animal Science courses will emphasize the importance of writing by providing you with multiple written assignments. This might include reading a scientific paper and then developing a short written summary that focuses on your understanding of the paper (Barry & Oath, 2013). The purpose of utilizing your reading and writing skills in your Animal Science courses is to help you understand the supplementary reading material that ties into concepts discussed in class (Barry & Oath, 2013). Subsequently, you will be required to prepare a short-written summary that reinforces those learned concepts (Barry & Oath, 2013). This will be a good starting point to help you develop your writing skills and will allow professors to measure students' knowledge before presenting new concepts in class.

Other writing will consist of developing a short argumentative paper in which you will have to find at least five scientific research articles to support your stance on a topic. This will include reading multiple scientific articles before implementing these into your own writing. Not only will these short writing assignments push you to utilize your reading skills, but it will also help you gain more confidence with all of your writing processes (Trojan, Meyers, and Hudson, 2016). Writing argumentative papers will give you the opportunity to express your ideas and thoroughly think about key concepts as you develop your paper. Professor Kristina Horback explains how the development of an argumentative paper is an essential writing component to the Animal Sciences. She also understands that any type of writing can be a difficult process:

The structure of an argumentative paper is to make sure that all the students can clearly justify their opinions with scientific facts...This will allow for any student to move forward when taking on new stances such as discussing about politics, social movements, and welfare issues in the Animal Sciences...If a student is struggling with writing any type of paper, I would recommend for students to reach out to their professors for help and ask for examples of a well-written paper.

Although Horback specifically mentions that students should approach their professors when struggling with a paper, one of the perks of being a UC Davis student is that we have a writing support center on campus. This resource allows students, like yourself, to take advantage of any opportunity to further improve your writing skills.

Furthermore, Professor Russ Hovey, highlights the purpose of reading and writing:

At the most fundamental level, it doesn't matter if you are writing a diary or a scientific paper, because it's a mechanism to distill and concentrate your thoughts. Scientists tell a story, but it just happens to be an experimental story about data and hard facts. In terms of reading, it's the same sort of thing, it goes back to the concept of reading a scientific paper. The authors in these papers are trying to condense that information and, simultaneously, the reader is trying to interpret that information... This in turn, gives students a sense of responsibility to ask questions and dig deeper.

As a first year Animal Science student, you may not feel confident in your reading and writing abilities, however, you already have an advantage in these two subjects. In high school, you were asked to read multiple novels and critique them through an assigned written task. That skill is no different than what you will be asked to do in any Animal Science course. All of your previous reading and writing experiences, whether it's in school or not, can contribute to your success today as an Animal Scientist.

Conclusion

During your typical four-year college journey, your Animal Science professors will give you all the tools you need to significantly improve your reading and writing skills. In fact, your professors will expect you to critically evaluate and reflect on reading material presented throughout your different courses. Subsequently, professors will also assign you different writing assignments that aim to engage students like yourself, with course material so that you can further improve your writing processes. I understand that some of you may still feel nervous about this transition and I may not have answered all of your questions. As a current Animal Science student, I know that improving reading and writing skills requires time and deliberate practice. Progression and growth in these two areas is what separates students from Animal Scientists.

References

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