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When Good Scientists Assign Bad Term Papers

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When I assigned that first written paper in my Introduction to Pharmacology course, I knew what I had in mind: students would find a recent news report about a pharmaceutical drug, hopefully one where some controversy was mentioned, investigate the drug and why it was in the news, do a little simple background reading on the drug itself, and translate all that information into a short paper that a lay person could understand. The course learning objectives (LOs) emphasize discipline-specific critical thinking skills, such as researching unfamiliar drugs, evaluating sources, and communicating drug information to potential clients. In the spirit of writing across the curriculum, using a term paper to assess these LOs while reinforcing student's writing skills seemed like a good idea to me.

Most of my students are in the nursing program at a 2-year branch campus of a major urban university. They may not be bound for graduate school, but they have passed some tough pre-requisites and should be competent students. They also have, in theory, taken and passed our freshman English course. Having them evaluate a news report and translate the underlying science for their future patients seemed a reasonable ask.

The first indication that something was amiss came when several students reported they "couldn't find any drugs in the news." This perplexed me; a simple web search revealed multiple news articles about pharmaceuticals. When the papers came in, the scores weren't

horrible, but many felt like slap-dash efforts put together the night before, just to earn a grade in a class. (Surely not my students?!) Even though the assignment was meant to mimic critical thinking skills that they would need as nurses, students didn't seem to buy into the idea that this was important – that it would actually be useful after they graduated.

Conversations with our nursing faculty confirmed that these critical thinking tasks, and that level of communication, would be part of my students' ultimate professional responsibilities. I decided to continue with the assignment, but turned to points to incentivize better work. The first two years of the assignment, it was worth 15 points of extra credit. When the paper became required, I doubled the point value to 30 and provided a grading rubric with four sections: Focus & Organization; Grammar & Spelling; Drug Discussion; and Rhetorical Analysis (for information on rubrics, see; Nilson, 2016; Walvoord & Anderson, 2010). Leaving aside the fact that students had no idea what rhetorical analysis meant, providing the rubric may have helped them, but it increased the feeling that I was giving an English Comp assignment, not an Intro Pharmacology one. What I wanted the students to do was think critically about a drug, yet what they were earning points on was writing mechanics.

Many of the papers didn't show evidence of the types of analysis the LO's called for, but I wasn't sure how to develop that. As a biologist without much training in composition, I turned to my library and English colleagues for help teaching writing and continued to increase the point value. Over several years, the grading scale increased to 50 points, then 60, then 75, and finally 100 points (equivalent to the final exam). The paper has been divided into four parts, each with its own deadline and point value. Students now submit a topic paragraph early in the semester (10 points), followed by an outline & annotated bibliography (20 points), then a first draft (50 points) and a final draft (20 points).

Splitting the full paper into first and final drafts allows students an opportunity to improve their writing. When the assignment consisted of only one draft students had no chance to learn from the writing process. For those who may need more coaching, two drafts theoretically gives them an opportunity for significant changes, and if I'm going to teach writing, it gives me a vehicle to do it.

In another effort to generate more interest in the assignment, I increased the options for topics; perhaps if students were more excited about their paper, they would invest more into it. The updated list added two additional ideas (treatment of a disease and history of a medication), but administering three versions of the assignment was taxing on us all. The most recent iteration of this assignment is a paper that describes "the pharmacologic treatment of a disease or medical condition." Students can come at it from the disease side or the drug side, but ultimately both aspects must be included. This topic is broader than just a drug in the news, and it ups the critical thinking coefficient for the research and writing.

As this assignment evolved, and increased in point value, the grading rubric has expanded and the instructions have become more detailed. There is now a rubric for each graded portion of the paper (though the ones for topic paragraph and annotated bibliography are fairly simple). The rubric for the first and final drafts includes sections for: Directions Followed; Focus & Flow; Grammar & Editing; Drug Discussion; Disease Discussion; and References. Having separate grades for discussion of the drug they've chosen and the disease it treats helps to put more focus on core of the paper – a report about the pharmacological treatment of a disease.

Students now had a better idea of my expectations, but something about the writing still bothered me. Even when they showed passion for the subject, the papers could still be a patchwork of ideas. Analyzing this disconnect has helped identify some issues. First of all,

encouraging better writing must start with clearer definition of what "good writing" looks like. After doing my own critical thinking, I can now articulate what this means for this assignment: Good writing tells a coherent story; bad writing is strung-together facts – a literal or metaphorical cut-n-paste job. Good writing uses good sources; bad writing relies on the top 5 hits from a Google search. Good writing thoroughly addresses the topic; bad writing is superficial.

When the assignment started, I viewed the research portion as the place for critical thinking and the written paper as simply evidence of that process. In the STEM disciplines, that often seems to be the case; we conduct experiments and draw conclusions from them, then we write up the results. However, in the teaching literature one can find the view that writing is really part of the of critical thinking process (Badley, 2009). It was through preparing this manuscript that I first put into words what good writing meant to me. It took actual writing to give form to that part of my story. Perhaps for my students, many of the writing problems are really thinking problems. The better rubrics, with clearly defined point distributions help, but they also need explicit instruction that identifying the story they want to tell is as much a part of the work as researching the drug and disease. And once they identify their story, they can begin to craft a way to tell it.

Research still matters. Teaching students how to choose and cite sources is still vital. Most students know to avoid Wikipedia, and usually strive to get their citation style correct, but beyond that many show little judgement of their sources. So I explain that sources must be "scholarly" in nature and could include scientific and nursing publications, drug guides or manuals, textbooks, and credible websites. Teaching them to discern the credibility of a website is still a work in progress, but very much in keeping with the LOs of the course. Having students turn in an annotated bibliography has been a start. Many students remain stymied by the concept

of annotating a bibliography. But to be fair, the whole concept of a bibliography stymies some of them, even without an expectation of annotations. When I first asked students to submit a list of possible sources prior to the finished paper, I mostly got those top 5 hits from a Google search, pasted into a document with no discernable formatting. The idea behind the annotations is to make students actually look at their sources and think about how they would use them. One challenge has been getting students to understand what the term "annotated" means, and in a few cases, to understand that they should remove the annotations from the final draft. A worksheet asking them to describe what they hope to get from each source, and judge its credibility, is my next step.

This assignment has grown over the years, from a short report about a drug in the news to a full-fledged Term Paper. It still feels like much of the process is teaching an English class – neither my strength nor my passion – but I've come to realize that showing my students how to write well is a central part of teaching critical thinking, and that is definitely my passion.

References

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