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Biology Lab Reports and Posters: A Guide for Writers and Tutors

The Theories and Methods Used to Develop a Writing Center Biology Resource for Student Writers and Writing Associates

Abstract

Across the country, writing centers commonly employ generalist tutoring. This approach to tutoring has been largely successful at producing better writers. However, for student writers in the sciences, specialist knowledge is often valuable, or even necessary in order an appointment to be deemed successful. Evidence even suggests that a lack of specialist tutors within the writing center has resulted in student writers' reluctance to bring biology laboratory reports into the Trinity College Writing Center. Because of this, an informative pamphlet on writing biology laboratory reports and posters was constructed. The pamphlet is designed to provide writing associates and to student writers in biology with the specialist knowledge that they need as they work on biology laboratory reports. Information collected from personal experiences, biology writing literature, and interviews with biology professors all contributed to the body of knowledge found in this pamphlet.

Introduction

Early on in the academic careers of students in the sciences, it becomes self-evident that writing in the sciences is fundamentally different from writing in other disciplines. This realization applies mainly to writing laboratory reports and is coupled with the realization that writing styles in different disciplines within the sciences also differ from each other. With these realizations, it becomes necessary for students to seek out a forum where they can work to familiarize themselves with the demands and the value system that apply to these new genres of writing. As with many other colleges and universities across the country, the forum for discussion which works to generate better student-writers at Trinity College is the Writing Center. However, the methods by which writing associates approach scientific writing have come into question at writing centers across the county.

A writing associate's approach to scientific writing is an issue that directly relates to generalist and specialist tutoring. Many writing centers are mostly comprised of writing associates with academic backgrounds in the humanities (Kohn 2).These associates, in turn, cater to a large body of students who are from a broad range of academic backgrounds. This population dynamic does not always allow for specialist tutoring in an appointment. Specialist tutoring can be defined a method of tutoring in which a writing associate has course-specific discipline-specific knowledge about the paper which the student writer is attempting to complete (Fitzgerald and Ianetta 148). Despite this, Writing Centers are still beneficial organizations on college campuses because of the attributes of generalist tutoring. Generalist tutoring is the term used to describe sessions at the writing center in which the writing associate does not have course-specific or discipline-specific knowledge about the student's work (Fitzgerald and Ianetta 148).

It is the opinion of many writing scholars that generalist tutoring is superior to specialist tutoring (Fitzgerald and Ianetta 148). This is because the generalist tutor's lack of specialist knowledge makes it necessary for the student writer to take on the role of the expert in the appointment (Fitzgerald and Ianetta 148). This helps the student writer in that it keeps the writing associate to a nondirective or minimalist role (Fitzgerald and Ianetta 105-148). This role prevents that writing associate from providing too much help to a student writer, which would inhibit the student's growth as a writer (Fitzgerald and Ianetta 105).

Although generalist tutoring has many attributes, it is also helpful for the writing associate to know about the confines of the genre that a student is working in (Fitzgerald and Ianetta 147). Awareness of genre in general is important for a writing associate because it allows said writing associate to help a student writer even if he or she does not possess specialist knowledge (Fitzgerald and Ianetta 147). Awareness of gene is also important in that it helps a writing associate to understand the the requirements necessary for certain writing assignments (Fitzgerald and Ianetta 147). According to Writing Center researcher Irene Clark, both the generalist tutor and the student writer should ask the following questions for writing in any genre in order to ensure that both participants in the appointment are aware of genre:

- What purpose does this genre serve?
- What are the features of this genre?
- How do its particular generic features serve its purpose?
- Whose interests does this genre serve?
- How is this genre similar to and different from other text genres?
- What creative variations on this genre are likely to enhance its effectiveness?
- Which ones will be inappropriate and therefore ineffective?

(Fitzgerald and Ianetta 147)

The fundamental differences between scientific writing and writing in other genres makes it difficult for writing associates to answer these questions with regards to scientific writing. These difficulties can impede a session and thusly create the impression that students in the sciences do not belong at the writing center. In order to prevent this from occurring, it becomes necessary for writing centers to "find innovative ways to provide workable tutoring strategies for scientific writing" (Kohn 1). In their own experiences, Robert W. Barnett and Lois M. Rosen found that handouts were useful forms of support for students and faculty in the Writing Across Curriculum (WAC)/Writing Center partnership at the University of Michigan-Flint (Barnett Rosen 11). Kohn also found that handouts and checklists were valuable resources for novice writers in the sciences (Kohn 2). However, he also supplemented these articles and checklists with a training program in scientific writing which was structured based on discussions between the writing center staff and professors in the sciences (Kohn 2). The concerns of these professors were implemented in the training program, and supplemented by genre-based WAC-WID (Writing in Discipline) research, meaning that Kohn's program was rooted in rhetoric instead of content (Kohn 2).

In our own attempts to make the Trinity College writing center more conducive to scientific writing, Riley Risteen and I considered modifications that would complement the design scheme that is already in place. We also considered the benefits of the methods that Barnett, Rosen, and Kohn used. These considerations inspired us to construct a pamphlet on scientific writing. We felt confident that a pamphlet would complement the structure of our writing center. This is because a pamphlet for writing laboratory reports in chemistry has already proven to be a useful resource at our writing center. This pamphlet would describe the content

which belongs in scientific writing and briefly indicate the rhetorical reasoning that justifies the content's presence in the paper. In order to create such a pamphlet, we would draw upon our own knowledge of scientific writing, published literature on scientific writing, and Trinity College science professors' statements about scientific writing.

As it is noted above, a pamphlet for writing laboratory reports in chemistry already exists at the Trinity College Writing Center. However, because writing varies so much between different disciplines in the sciences, this pamphlet cannot benefit student writers in genres outside of chemistry. As biology majors, Riley Risteen and I were especially sensitive to the absence of a resource for writing in biology that would benefit us as biology students. As writing associates were sensitive to the lack of a resource that would be useful to our fellow writing associates who are generalist tutors for biology writing. In our personal experience as both biology majors and writing associates, Riley and I found that biology laboratory reports and posters cause the most distress amongst the students who must complete them and the writing associates who come to their aide. It is for this reason that Riley Risteen and I decided to design a pamphlet on writing biology laboratory reports and posters for both tutors and student writers to utilize at Trinity.

Materials and Methods

In efforts to create a source of information for student writers in the biological sciences at Trinity College and writing associates at Trinity College to use, information was drawn from three different sources. The first of these sources was the body of knowledge which Riley and I had accrued from our personal experiences writing biology lab reports. The second source was

scientific literature which addresses the protocol for writing biology lab reports. Finally, the third source of information came from biology professors at Trinity College.

During the interviewing process, Riley and I chose professors from different academic backgrounds within the biological sciences to interview. The professors interviewed were Professor O'Donnell, who has a background in ecology; Professor Schneider, who has a background in botany; Professor Archer, who has a background in botany; Professor Fournier who has a background in molecular biology. Professor Foster, who has a background in microbiology was also interviewed. These five professors were asked eleven questions about the biology laboratory report and poster over the course of about thirty minutes. These questions were relevant to the format, content, and intentions that mold the genre of writing that biology laboratory reports and poster fall under. These questions were also designed with the intent that the answers that would provoke would be helpful to biology student writers and tutors alike.

In order to compile the data that we had collected into a lab report, our first step was to outline extensively. We then organized our outline based upon the organization of sections in a laboratory report (abstract, introduction, materials and methods, results, and discussion). The information that we recorded first was our preexisting knowledge about biology laboratory writing. Next, we included information from *A Short Guide to Writing About Biology***,** the source that is primarily recommended to students in the introductory biology courses, Biology 182 and Biology 183. Finally, we incorporated some of the points of interest that professors had with regards to student laboratory reports. We included the rules that were referred to by all three sources and made sure to include rules that were mentioned by the professors but not found in the literature. We also included writing tips from the professors. Finally, we included a disclaimer which encouraged students to refer to their syllabi, handouts, and to their professors

before or as they referred to the pamphlet in order to ensure that any supplemental writing requirements within their courses were being met.

Results

The result of this product is the completed pamphlet "Biology Laboratory Reports and Posters: A Guide for Writers and Tutors." The pamphlet describes the content that should appear in each section of a traditional biology laboratory report. Within each description of content in the pamphlet, there is also some mention of the overarching rhetorical roles that the content serves. The pamphlet also contains a section which discusses the content of a poster and the rhetorical reasons why this content is appropriate for posters as opposed to laboratory reports.

Discussion

Over the course of one year (from 12/1/14 – 12/1/15) 50 students came in to the writing center to work on an assignment for a biology course, and lab reports made up about 5.5% of all assignments brought to the writing center. While these numbers are relatively low compared to the amount of assignments of other subjects and types that are brought to the writing center, students majoring in biology are the second most frequently reported major at the writing center (discounting the "undeclared" and "undecided" responses). In fact, the Biology major was reported in writing center client report forms more than the Public Policy,

Figure 1: the frequency of 11 selected responses regarding student major on client report forms over the course of one year.

Major	Times Reported
"Undecided"	406
"Undeclared"	224
Economics	129
Biology	102
English	73
Public Policy	50
Biochemistry	22
History	22
Anthropology	9
Religion	9
Sociology	9

History, Anthropology, Sociology, and Religion majors combined (Figure 1). Therefore, the lack of appointments for biology assignments cannot be attributed to biology students not using the writing center. One explanation for the disparity between biology-major attendance and the amount of lab reports and assignments for biology courses brought to the writing center is that students believe that the writing center is ill equipped to help students with science-based assignments.

A study on the use of academic resources by engineering students at Virginia Tech revealed that students majoring in engineering viewed their writing center as a helpful resource for their "writing requirements" (Amenkhienan and Kogan 523-540). The specific use of the writing center by engineers for assignments in core writing classes instead of engineering courses supports our theory that scientists assume the writing center is only equipped to handle papers for humanities classes.

Several writing associates at trinity also share this view. We have countless conversations during our Rhetoric 302 class in which associates have confessed that they do not know how to help someone write a lab report. The associates' lack of knowledge in laboratory writing is not seen as a pressing issue since the writing center at Trinity College is more focused on generalist tutoring, arguing that tutors with no background in science can still help students work on grammar and sentence structure. While tutors without specialized knowledge of lab reports *are* able to help with these aspects, science students miss out on the opportunity to learn more about structure, format, and content.

This trifold will provide students and writing associates with a basic understanding of writing lab reports, specific to the trinity college biology department. It can be used as a supplemental source of information to provide details on the specific style of biology lab reports,

to be used alongside the generalist tutor's advice on clarity and grammar. Additionally, it will make new tutors more confident and remind biology students that we can work with them on more than just assignments for their required humanities courses.

Literature Cited

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