

Building a Student Community to Improve Student Writing Skills

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First year college students find scientific writing difficult. They often take a first year writing class, but the style and content required in laboratory reports is new to them. In addition, scientific disciplines approach student writing differently, and there is often no systematic approach to teaching science writing across the curriculum, and no expectations for progress from year to year. As scientists, we communicate by reading and writing papers. Reading papers is daunting for first year students, and writing like a scientist is even harder. At first, students find reading papers very difficult. The language is strange, they don't understand the jargon; papers are long and quite difficult to follow. They wonder how they will ever belong to the group that actually writes these documents! Introducing students to scientific literature early and using suitable examples helps them to model and improve their writing.

Keywords: Student writing skills

Introduction

Learning Assistants and Writing Fellows

RIT's Learning Assistant (LA) Program started in 2012. Based on the model developed at the University of Colorado, Boulder, the program seeks to transform science courses by creating environments in which students can interact with one another, engage in collaborative problem solving, and articulate their ideas. Our LAs are undergraduates, often near peers, who help to facilitate small group interactions, both in and outside the classroom. The LAs receive training in pedagogy, and classroom management, and help to develop and revise activities and materials. RIT's University Writing Program (UWP) is responsible for Writing Across the Curriculum. In addition to first year writing classes, science students typically take one or two Writing Intensive (WI) courses within their discipline. To assist students with writing, the UWP trains and employs Writing Fellows. In an ongoing collaboration with the UWP, we have initiated a training program for LAs with an emphasis on writing in science. Although Introduction to Biology is not a WI course, it is a gateway course to the second year WI courses. Our aim in this study was to develop reading and writing activities to prepare students for their discipline-specific writing intensive courses.

Reflective Reading Exercise

We provided students with the materials and methods sections of two papers that were relevant to their laboratory project. They compared the structure and "readability" and considered whether the authors provided enough detail for a fellow scientist to repeat their experiment. The LAs helped student groups articulate their thoughts, and together they composed a list of "effective" and "not effective" elements for a materials and methods section.

Effective elements included: use of the past tense, use of sections and subheadings, and including details regarding the experimental treatments and measurements.

Elements that were identified as "not effective" included: Listing procedures in recipe format using bullet points, listing materials in recipe format, writing for a classmate or science newbie still learning proper technique, including unnecessary details such as wiping down benches.

Students submitted a first draft and reviewed their own writing using their list of "effective" and "not effective" elements. Following feedback from their professor, LA and/or writing fellow, students completed a final draft.

We compared first drafts and final drafts from a subset of the classes that completed the reflective writing

exercise with final drafts from the previous year's class, who did not complete the reflective writing exercise. The papers were coded for instances of incorrect tense, use of bulleted lists of methods and/or materials, excess or unnecessary detail, and insufficient detail. The results are

shown in figure 1. Students who had completed the exercise had fewer instances of incorrect use of tense, use of bulleted lists and inclusion of unnecessary detail. Instances of insufficient detail increased slightly.

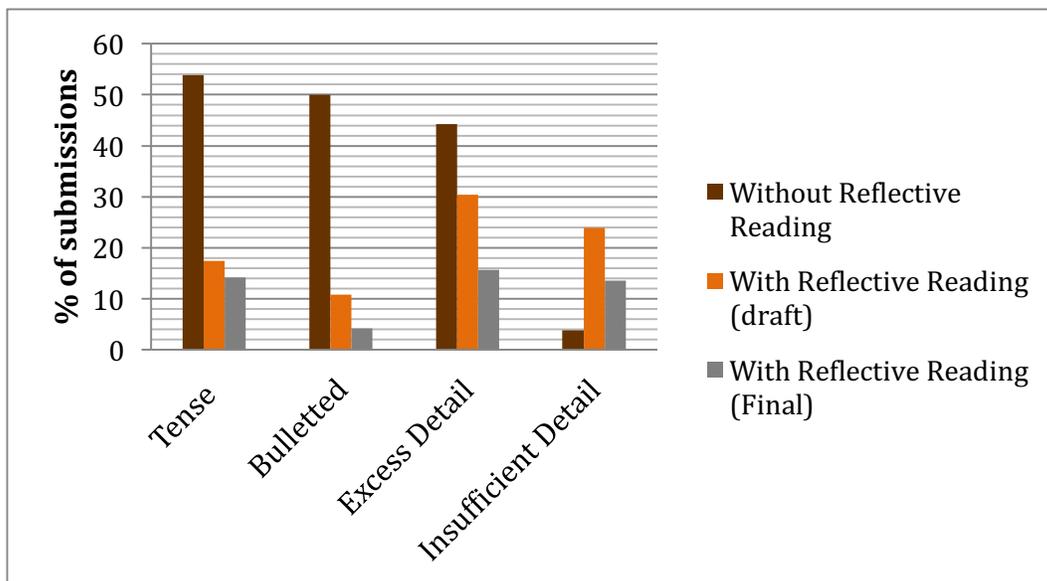


Figure 1. Comparison of a sub set of completed papers with papers from a previous class (who had not completed the reflective reading exercise).

In conclusion, reading and discussion of primary literature aids “writing like a scientist”. The read-write-review-revision sequence, with support from writing fellows and faculty helps build student’s confidence and incorporation of writing exercises into the curriculum changes student’s views of writing. Learning Assistants and Writing Fellows can help first year students with reflective writing and to determine effective strategies for scientific writing.

Mission, Review Process & Disclaimer

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