EFFECTIVENESS OF AN ONLINE WRITING SYSTEM IN IMPROVING STUDENTS' WRITING SKILLS IN ENGINEERING

Patricia Ryaby Backer
Professor, Department of Aviation and Technology

Introduction

Technology and Civilization is an advanced general education course (Area V: Culture, Civilization & Global Understanding) in the College of Engineering at San José State University (SJSU) that is designed to introduce students to the realm of history and usage of technology in society from an international perspective and to increase their awareness of both the uncertainties as well as the promises of the utilization of technology as a creative human enterprise. This paper will present detailed data on student achievement of the course and General Education learning objectives. This course utilized the ETS Criterion Writing Evaluation System to allow the students to get enhanced feedback on their writing. In this paper, we will analyze the effects of Criterion on student learning outcomes. We will compare student performance from the Criterion pilot with existing assessment data from this course.

Materials and methods

- Tech 198 is delivered in a novel way. It has a hybrid structure and is composed of three units that are delivered through self-paced multimedia CD (Units 1, 3, and 4), one unit that is delivered through WWW instruction (Unit 2), and three units that are delivered either through a traditional classroom model or using a course management system.
- In addition to homework, each student must submit two research exercises. For each research exercise, the class is given a topic and article related to the content of this class. Using library resources, each student must find additional articles, books, etc that relate to the article given. Each paper was graded, rewritten, and submitted a second time.
- Each assignment had to be submitted to Criterion. Criterion operates on a web-based platform, is instructor driven, and can be used a tool for students to plan, write and revise their essays.

Results

- For the rough and final drafts for both Research Exercises, the instructor reviewed the Criterion report for the last essay submitted by each student. For Research Exercise 1, the instructor focused on the grammar errors in Criterion. The number of grammatical errors decreased over the four assignments.
- Eighty-seven students submitted both draft papers to Criterion.
- The average number of errors for Research Exercise 1 draft was 2.87 as compared to 1.7 for Research Exercise 2 draft paper.
- A t-test comparing the students' grammatical errors on the two draft research papers was also significant ($p<.01$).
- Students did better on their second rough draft (Research Exercise 2 draft) than they did on their first one (Research Exercise 1 draft). This implies that the students were using the system to learn from their mistakes and they made fewer mistakes the second time around.
- In addition to the number of grammatical errors, we compared the grades on both research exercises for the Fall 2012 class with the grades from the Spring 2012 class to see if there was a difference. In general, for this class, students receive higher grades on Research Exercise 2 as compared to Research Exercise 1.
- Students were given several statements about their experiences with Criterion using a 4 point Likert scale (1=Strongly Disagree; 2=Disagree; 3=Agree; 4=Strongly Agree). Some of the questions that received > 3.0 were:

- I like receiving immediate feedback on my writing (rating=3.43)
- I like that Criterion is online and can be used 24 hours a day
- I used Criterion to correct mechanical and grammatical errors in my writing (rating=3.30)
- I like receiving the kind of immediate feedback on my writing that Criterion offers (rating=3.13)
- I like that Criterion checks my grammar and spelling (rating=3.10)
- My instructor was able to help me use the Criterion program more effectively (rating=3.05)

Conclusions

Due to the history of low writing skills in the Tech 198: Technology and Civilization course at SJSU, the Fall 2012 instructor in Tech 198 piloted ETS Criterion Online Writing Evaluation Service in the class for the two research papers required. The hypothesis was that the use of ETS Criterion would improve students' writing in the class, therefore reducing the amount of time required to grade the students' research papers. Overall, this research shows that adopting Criterion has better served students who previously had difficulties writing. The unique tools that Criterion offers allows students to receive real-time feedback on their submitted work, get access to detailed descriptions of their mistakes, and revise their essays in a timely manner; thereby, improving the efficiency of the instructor and the confidence and writing capacity of the student.

This is evidenced at San Jose State University in the comparison between two sections of Tech 198: Technology and Civilization's spring and fall 2012 classes. Based upon the data collected, it can be said that, with the introduction of Criterion in fall, students reduced the number of grammatical errors on their assignments and increased their grades on their research papers, compared to the Spring 2012 semester. Given the positive results the instructors and advised the General Education committee to continue the use of Criterion in the Tech 198 course, as well as extend it to other SJSU classes.

An Example of Criterion

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