



Faculty Forum

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Incorporating the Teaching of Writing into Science Classes

For decades now, several factors have worked to reduce the average 18-year-old's ability to write effectively. Curriculum requirements have been lowered, teachers faced with rising class sizes and the demise of discipline struggle just to present the required material in the time allotted, and academically adept students get very little encouragement and validation from the mainstream media portrayals of the "cool" teenager. As Terry Nienhuis pointed out in the last Forum, it takes a concerted effort on all our parts, not just from those who teach English composition, to help our students improve their writing skills.

A course in which the entire grade is derived from exam scores produces a scallop-shaped effort curve. Most students put the minimum required effort (usually none) into the course until an exam comes around, at which point their effort increases markedly. Following the exam, their effort again drops to approximately nil, until the next exam forces them into action. There are several undesirable ramifications of this work style. Focusing on the exam as their goal, the students learn the material in a manner designed to satisfy the requirements of the exam rather than foster true understanding and permanent learning. In addition, the students are always working under duress because they are motivated by the stress of the impending exam.

Since you can't change the fact that most students will see the course grade as their primary goal, my chosen solution is to make a significant percentage of the course grade (I've gone as high as 50% in some classes) dependent on daily in-class participation. In addition to handing out the standard syllabus, I post my lecture notes on my website and include several study questions at the end of each set of notes. Students who are less inclined than others to speak in class can write answers to two of the study questions, hand them in before I give the lecture to prove they went over the material before class, and get their in-class participation points for that day. This provides the students numerous opportunities to polish not only their writing skills but their reading comprehension and oral presentation skills as well throughout the course of the semester. It also insures that the students read and think about the material on a regular basis, rather than just before exams. When the students have seen the material before the lecture, it enables you to move quickly through the basic facts and spend more time talking about how this material relates to material from other courses or how it relates to their lives. You build the kinds of cognitive associations that give these facts meaning, which leads

to the best quality learning there is. In addition, those students who enjoy a real intellectual exercise in class enjoy the class a lot more.

We are all pressed for time, and there is no getting around the fact that teaching writing takes time. However, it is important in all aspects of our lives that we take time for the things that are truly important. If you believe, as we all say we do, that it is important to teach writing, then you must make the time to teach writing. Below are a couple suggestions to reduce the time and labor required.

1. Many mistakes are made by multiple students in each class. Instead of writing longhand comments on every paper, write numbers on their papers and provide a list of numbered comments for the students to refer to. Indicate with a circle or underline exactly which words are problematic but give a generally worded comment on the numbered list that will apply to all instances in which that particular mistake is made.
2. A similar strategy can be applied to the daily study questions. When you hand the study questions back, provide the students with your own complete, well-written answers to the study questions. This way, when you read the students' answers, you only need to mark their answers with an A if the answer is good, a B if the answer is OK but they need to consult the answer sheet to improve it, and a C if the answer is off base. Those who got B's or C's get the extra practice of comparing their answer to the correct one, providing them with another opportunity to rehearse the material.
3. For another approach, have the students hand in an audiotape with their papers. Again, write numbers on their papers in the places where you want to make comments but record your actual comments on the tape. This way, every student gets a thorough, personalized critique they can enjoy over and over again, and all you actually have to write is numbers on their papers.

There are many factors you can blame the problem on. Most of our students were not their high school's academic elite. High schools send students to college less well prepared every year. The university administration does not provide enough faculty positions to keep class sizes small. All true, but none of this changes the fact that we who teach at the college level are faced with a generation of students who must be taught to write effectively, and the problem is too urgent to wait for the help that isn't coming. It is up to us to make the necessary commitment of time and energy to teach these kids to write properly, even though there are times when we may feel that we on the front line are the only ones who are upholding the commitment. Keep in mind that you will do some good even if you can only find a couple weeks during the semester when you can implement these practices. Those who play a small part in the solution are still part of the solution.

Ron Michaelis, Biology

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Response to "Incorporating the Teaching of Writing into Science Classes" by Ron Michaelis, 11/1/05

Whose job is it to teach writing at the university level? Until recently, many teachers might have said this job description belongs solely to the Department of English. While it is most certainly the primary focus of the English Department's Composition Program, we cannot and should not be the only purveyors of this skill. As writing in the humanities differs from writing in the sciences, and as writing in any one discipline often differs from writing in any other, it must be the responsibility of all university teachers to make sure their students are writing well. Kudos to Ron Michaelis for reminding us all of this responsibility. Ron's ideas for incorporating writing into science classes suggest, and we agree, that teaching writing is also about teaching the critical thinking and analysis skills that we all treasure as part of a university education. Ron's final words bear repeating: "Those who play a small part in the solution are still part of the solution."

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