Lacey Weeks

Professor Raney

EN 310W

Bad Ideas About Writing Essay

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Writing Isn't Important for Science and Tech Majors

At my old high school, writing is associated with the English classes, but never with the science and math related classes. During my four years there, I had the impression that I should go into the more science, engineering, or technology related fields because these fields are more valuable than the arts and English related fields. Not once did I believe that the writing skills I learned in my English classes would benefit me in any way as a Science Technology Engineering Mathematics (STEM for short) major. I never saw the importance of improving my writing skills because of the division between the STEM and arts/humanities fields, so I put very little effort in my English classes. However, I soon learn in college that it is a bad idea to assume that writing is not important in the STEM fields.

Science and technology can be attractive fields for many people, especially those who are curious about the world around them or even want to build the latest gadgets. Not only that, but science and technology can benefit society in many ways, from finding a cure for cancer to building a mobile app for education. Both science and technology can be amazing fields to go into as these fields tend to offer challenging, yet rewarding work and offer high paying jobs, especially in the technology field. Students pursuing a science or technology related majors will learn important information in their chosen fields such as programming, for example. However, as useful as some of these skills are, what about the students' writing skills? When applying for

jobs, regardless if a student is interested in becoming a software engineer or a chemist, one of the important skills that an employer looks for is the ability to communicate efficiently, whether it be verbal or written communication. Through their classes, do science and technology majors have plenty of chances to work on and improve their writing skills through work such as homework or short answer and essay questions on tests?

To be able to communicate and write well remains a great skill to have, especially when potential employers are looking for this type of skill. However, students in the science and technology fields may or may not see writing as an important skill to have. For example, in the article "The Importance of Writing Skills in Tech-Related Fields" by Professor Theresa MacPhail, she points out that students complain about the writing assignments in her writing course, though she did not specify if this particular writing course is geared towards the science students particularly or is geared towards all majors. Particularly, a science major student stated that "we're all science majors, so we do not really need to know how to write" (MacPhail). Unfortunately, many other students share similar views to this student and do not see the value in writing. The author continues by stating that most of her students in the writing class tend to be science and engineering majors who are only taking this class to fulfill a humanities requirement. When students are required to take a class to fulfill a general education requirement, they may not take the class as seriously as one of their major classes. This is unfortunate because writing is a valuable skill that can be applied to many fields, not just being a novelist.

Writing is seen as unimportant if it is only taken to fulfill a general education requirement and not incorporated into a student's major. If it cannot be connected to the science and technology majors, then a student in one of these majors might not see how it connects to them in their life. There should be more writing classes or more writing-related assignments that relate

to the different science and technology majors to help better prepare students. How much writing experience a student gains during their college career can vary depending on the major the student chose, the university they are attending, and any personal writing project they are working on. For example, at the University of North Alabama, all computer science majors are required to take CS 410W, which is a writing course focused on programming languages. In this class, students are required to write a research paper over a programming language of their choice. Classes such as this one can give students an opportunity to work on their writing skills and apply writing to their major.

How Writing Help Current Students

Writing in a class, whether it is by taking notes or by assignments, writing can benefit a student. For instance, writing can help a student learn a given subject better. According to the article "Why Include Writing in My Courses?" on the Colorado State University's website, the writing assignments "helps students learn material and improve their thinking about ideas in the courses" (Why Include Writing in my Courses?). For example, in a computer science class it is not enough to simply attend class and listen to the lecture. Due to the nature of the courses, listening to the lecture will only get the student so far because the topics of the computer science courses tend to be complex. Therefore, taking notes in class and working on assignments that involve short answer questions will benefit the student. Taking notes, for example, will involve the student needing to pay attention in class. Thus, they are more likely to recall what is discussed in class. Taking notes, alongside writing assignments (i.e. research papers and questions from the students' textbooks that require the students to explain a concept), forces students to try to explain what the concepts they recently learned in their own words. This in turn requires the students to think about what they learned and how well they understood the

concepts. The article "Why STEM students should learn how to write" on the Study international website also supports this claim. As an example, the Study International website suggest teachers to ask their students the following questions: "What are the questions the report is trying to answer?", "What are the implications of this work compared to prior work?", and "What is the evidence for the anticipated conclusions?" (Why STEM Students Should Learn How to Write). They point out that, although students might know the answers to these questions, it does not necessarily mean that these students can articulate their ideas well. However, by requiring the students to go back and try to explain their answers, it helps reveal to the student whether they fully understood the questions asked of them or not. This in turn forces the student go back and analyze these questions again "if they find they are unable to address these questions" (Why STEM Students Should Learn How to Write). In other words, the process of writing and communicating a student's idea can help the student understand the topics they learned while also addressing if there is a topic they did not understand.

To give a personal example, in any given computer science class I had taken thus far, if I do not take notes while in class, I tend to be lost on whatever topic we discussed in class that day. However, when I do take notes, I find myself to be more alert about what the professor is discussing. Taking notes caused me to at least think a little bit about what is being discussed. Not only that but writing a paper over a few chapters from my Computer Organization and Architecture book for an independent study helped me understand the material better by forcing me to look at the material in a different way. Instead of seeing it as a reading assignment, I had to explain what I learned. To go along with this example, one of the computer science professors had once told a class of mine to treat some of the writing assignments and short answer questions on tests as if you were trying to explain a concept to other computer science students. For

example, imagine trying to explain concepts from Computer Science II to students who are in the Computer Science I class. In situations like this, writing can benefit a student by helping them learn a topic better.

Writing Does Not Go Away After Graduation

Writing is an important skill for all science and technology majors and especially important when working in science- and tech-related fields. For example, when working at a tech-related job, the student is likely to be working on a team. For the student and his or her team to succeed at their current project, they need to communicate as efficiently as they can with each other. Not only that but writing skills can go "hand-in-hand with effective coding," professor MacPhail states (MacPhail). For example, based off my experience in my computer science classes, it is good practice to document a code so that if other programmers looks at it, they can understand what each part of the code is intended to do. Writing can take many forms, from PowerPoint, to documentation and bug reports regarding code, or something as simple as a tweet on Twitter.

As easy as it is for science and technology students to push writing skills aside as unimportant, they cannot and should not ignore the fact that potential employers are looking for students with good writing skills, regardless of their major. The web page *BC Forward* demonstrate the importance of writing skills in the tech field. They list a few examples of how writing can be useful, such as "documenting a project scope" and "creating a user manual for a new database" (How Important Are Communication Skills for Information Technology Jobs?). Students cannot avoid writing completely, even if they are working as a programmer. Not only do the people at *BC Forward* see the value in writing skills in the science and technology related fields, but also James R. Koelsch at the Automation World website as well. In his article "Is

Writing an Essential Skill for Engineers?" Koelsch focuses more on the importance of writing for engineers; however, what he says can be applied to the science and technology fields. For instance, the author points out that an automation vendor, Rockwell Automation, tends to screen engineering applicants, looking for applicants who have good writing and verbal skills (Koelsch). This company values a person's technical ability but consider writing and communicating just as important as an individual's technical ability. The company's engineers need to be able to communicate clearly and efficiently with a variety of people, not just communicate with other engineers. Some people that engineers might communicate with, either by writing or speaking to the individual, might not be as a technical minded as the engineer, such as a customer. In the case of the engineers at Rockwell Automation, engineers could be writing proposals, contracts, or even manuals at their job.

Whichever career a student studying science or technology pursues, writing will be a valuable skill. Employers see value in the ability to write well. If a student has strong writing skills, that skill can help them obtain a job. If a student studying science or technology doubts employers are looking for this skill, the student can search for jobs related to their major on sites such as LinkedIn or Indeed. Many of the science and technology related jobs on sites such as these will mention verbal and written communication skills as desired skills.

Applying Writing to Science and Technology Classrooms

As important as writing skills are, it will not do students in the science and technology fields any good if the writing is not implemented in their classes in some form. That is where writing across the curriculum comes into play. I had briefly mentioned the program in one of the earlier sections regarding the importance of writing for the science and technology students.

To understand how writing across the curriculum (WAC for short) can play an important role in universities, especially for STEM students in general, WAC first needs to be defined. According to the "Writing Across the Curriculum: What, How, and Why" article written by Deva Dalporto, it "is a movement that began in the 1970s" and "is designed to boost children's critical thinking skills be requiring them to write in all of their classes – from math to social studies to science – and not just in the language arts" (Dalporto). This is not restricted to children-age students but can also benefit students in universities as well. The idea is to offer writing-related assignments and classes to all majors in universities so that students, regardless of their chosen major, can not only have the opportunity to improve their writing skills but also to use these skills to help them better understand the material they are studying and better prepare for jobs. The article "Writing across the Curriculum/Writing in the Disciplines" written by the National Council of Teachers of English offers a similar definition for the what WAC means. They state that WAC "emphasizes the role that writing can play in learning, whether it's keeping a journal, annotating a text, making fields notes, or reflecting on what we have learned" (Writing across the Curriculum/Writing in the Disciplines). In this definition of WAC, writing clearly applies to multiple areas including science. For example, in a geography class I had the opportunity to go on multiple field trips in different nearby areas in Alabama. During these trips we studied sinkholes and vegetation of certain areas. Part of these field trips involved making field notes, which helped students learned more about a given topic. This is only one of many examples where writing can be helpful to a class. WAC is well-intended to help students learn and grow through writing.

When implementing the WAC in universities, there is not a one size fits all strategy. One approach can involve making mandatory writing classes the relates specifically to a major. An

example of this approach would be the CS 410W class at the University of North Alabama (UNA for short). Like mentioned in a previous section, CS 410W is a writing class specifically designed for computer science students at UNA. It is required for all computer science students and focuses on writing research papers regarding programming languages such as C++ or Java. However, this is not the only strategy that universities and professors can use. The article "Writing Across the Curriculum: What, How and Why" includes a few approaches that can be applied in a classroom. The author lists a few examples such as journal writing, research projects, and even real world writing. With journal writing, a student can summarize his or her thoughts regarding the class content. Students can either write freely, or if they are not too sure about the direction they want to take then the professor can offer them writing prompts as a guide. It is simple and straightforward. A student does is not pressured into following a specific format, which allows them to be creative with their writing. Another approach is the research project. With this approach, students would be required to research a topic in a given discipline, which could be related to their major or even their interests. In the case of science and technology majors this research project can relate to their chosen major. In my case as a computer science major, my CS 410W and artificial intelligence classes will fit in this category since both classes involved a research project/paper. The third approach involves real world writing. This approach focuses on real world scenarios. To continue with using my major as an example, I will focus on "types of writing most often done" in computer science (Dalporto) with real world writing. This can involve textbooks, research, or scientific writing. In his article "Writing Across the Curriculum: Strategies for Immediate Integration and Implementation," author Tim Sheu gives a few other examples of how to apply writing to the classroom. One example he gives is the "model what you expect" approach. This approach can help students

understand a professor's expectation for a written assignment. This could be a template of how a written assignment should be designed or organized, for example. This approach can easily be applied to the science classes. For science majors, this approach can take the form of a lab report template to demonstrate "how to write a lab report using the appropriate conventions, verb tense, and voice" (Sheu).

Overall, there are multiple approaches on how to apply the WAC into the classroom. Some of these approaches will work in certain classes while other approaches are more appropriate for other classes. If the professors of the science and technology fields want to include WAC into their classrooms, they can incorporate any of the approaches listed in Tim Sheu's article or in the "Writing Across the Curriculum: What, How and Why" article, though these are not the only approaches they could take. Writing across the curriculum can benefit numerous science and technology students if the appropriate approaches are used within their classes. It is here to help students and professors alike to overcome these writing obstacles. Writing should not be feared or be negatively viewed by the science and technology students and professors, but instead be embraced.

Further Reading

If the reader is curious to learn more about the Writing Across the Curriculum program, visit the "An Introduction to Writing Across the Curriculum" page on the Colorado State University website. This page offers several articles, organized in different categories, from "Getting Started" and "Useful Knowledge" to "Assigning Writing" and "Designing and Assessing WAC Programs," to name a few categories. It is useful for anyone who is interested in how writing skills can be improved in all majors. If the reader wants to know more about specific areas where STEM majors can apply their writing skills, some examples of writing assignments

in classes, and challenges teaching writing in STEM, they can check out the paper "Best Practices for Teaching Writing in STEM: A Literature Survey and Case Study of San José State University's 100W Courses in STEM Disciplines" written by Shannon Bane. This paper is informative and goes over subjects such as "Need for Specialized Writing Instruction for STEM Majors in Higher Education," "Challenges Encountered by Faculty Teaching Writing," and even "Differences Between Student and Practitioner Work."

Keywords

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Author Bio

Lacey Weeks is a student studying computer science with a minor in business administration at the University of North Alabama. She is interested in becoming a technical writer or researcher in one of the following fields: computer science (focus on cryptography/cyber security, human computer interaction and user experience, or artificial intelligence), physics (focus on optics, light, quantum physics, geophysics, or astrophysics), Geographic Information Systems (GIS), or geology (focus on volcanoes and earthquakes).

Works Cited

Dalporto, Deva. *Writing Across the Curriculum: What, How, and Why*. 25 June 2013. Article. 1 Dec. 2019. https://www.weareteachers.com/writing-across-the-curriculum-what-how-and-why/.

"How Important Are Communication Skills for Information Technology Jobs?" 28 June 2017. *BC Forward.* Article. 6 Nov. 2019. https://www.bcforward.com/how-important-are-communication-skills-for-information-technology-jobs/.

Koelsch, James R. "Is Writing an Essential Skill for Engineers?" 1 Dec. 2011. *Automation World.* Article. 13 Nov. 2019. https://www.automationworld.com/home/article/13305851/is-writing-an-essential-skill-for-engineers.

MacPhail, Theresa. "The Impotance of Writing Skills in Tech-Related Fileds." 23 July 2015. *Chronicle Vitae.* Article. 13 Nov. 2019. https://chroniclevitae.com/news/1073-the-importance-of-writing-skills-in-tech-related-fields.

Sheu, Tim. *Writing Across the Curriculum: Strategies for Immediate Integration and Implementation*. 2018. Article. 1 Dec. 2019. https://www.nais.org/magazine/independent-teacher/spring-2018/writing-across-the-curriculum/.

"Why Include Writing in my Courses?" n.d. *The WAC Clearinghouse.* 13 Nov. 2019. https://wac.colostate.edu/resources/wac/intro/include/.

"Why STEM Students Should Learn How to Write." 13 Feb. 2019. *Study International.* Article. 13 Nov. 2019. https://www.studyinternational.com/news/why-stem-students-should-learn-how-to-write/.

"Writing across the Curriculum/Writing in the Disciplines." *National Council of Teachers of English* (2013). Article. 1 Dec. 2019. http://www.ncte.org/library/NCTEFiles/Resources/Journals/CCC/0643-feb2013/CCC0643Poster13.pdf.