Reading and Writing in Science

My first thought when I enrolled in Reading and Writing Across the Curriculum, was *Reading and writing are great, but they do not apply that much to my subject area*. Wow, I was wrong. I learned that there are many tools and factors that can be used and influence a student’s ability to read a scientific text. These include comprehension, writing, and notetaking. I have also learned how to accommodate for diversity and assess a student’s progress in literacy.

Comprehension is “the whole essence of reading” (Class Notes, 1/19/2012). Without comprehension, students gain nothing from reading a text. Unfortunately, there are many factors that influence a students’ ability to comprehend a text. One factor is a student’s reading skills. “Students who lack superior reading skills often miss out on important facts from the text and feel frustrated” (Wilfong, 2012, p. 56). This is especially true when the text is difficult, like many scientific texts. It is important to be creative. Wilfong discusses the Textmasters strategy. Although this is a great strategy, it is unlikely that I would ever use it in my classroom. However, I like many of the ideas Wilfong presents including having students work together and assigning different roles for each student. Making students responsible for a specific area of the text is beneficial, because they are not accountable for the entire text, just what they were assigned. Breaking down the text for students makes it easier for them to understand. I also believe students work well when they learn from each other. Sometimes it is hard for students to really understand the text, but participating in a low-pressure discussion with a small group of their peers can help them bring out the important details and the meaning of the text. Comprehension is such a broad and important topic, but even little things such as these can help students understand more of what they read.
One important skill that can increase a student’s comprehension is notetaking. This is something that is important in all classrooms, especially the science classroom. Many topics in science are first taught with a text, but often the student has a difficult time understanding what they are reading. Therefore, having them take good notes is an important tool to help them comprehend the material. Some of the benefits to notetaking are that it requires “students to evaluate relationships between information”, “helps [students] organize information”, and it helps students “do better in school and learn more content” (Class Notes, 2/28/2012). These three benefits all indicate a higher rate of comprehension of material.

The tricky part about notes is whether we should and how we should teach them. Fisher, Frey, & Mongrue (2008, p.151) portray a solution to this problem with a quote from a teacher that stated, “while people may have different ways of taking notes, I do believe that it’s a skill that can be taught”. I agree with this teacher on both points. Notetaking is an important skill that should be taught in the classroom. There are many strategies when it comes to taking notes. Students will respond to each of them differently. Therefore, it is necessary to teach many different strategies so students can choose which strategy works best for them. It is not about the grades associated with taking notes, but it is about what students take from learning proper notetaking and are able to transfer to their further education.

Another benefit of notetaking is that it is “useful for paper writing” (Class Notes, 2/28/12). Sharon Kane (2011, p. 189) gives an eye-opening statement about writing. “You will be a teacher of writing, as well as a teacher of reading in your content area; it will be your responsibility to show your students how to think through writing, as well as use writing to demonstrate their knowledge and skills”. This made me think of how I will teach writing in my content area. The most obvious answer is lab reports. But students hate lab reports. I hear it all
the time from my friends and classmates. How do I make it meaningful for my students while still teaching them the basics of scientific writing and thinking? Or as the authors of Getting Past “Just Because”: Teaching Writing in Science Class (Grymonpré, Cohn, and Solomon, 2012, p.24) write, how do we get them to “go beyond ‘just because’ and provide evidence and reasoning to back up their claims”?

Kane would classify most scientific writing as “informational writing” (Kane, 2011, p.199). Students may come to expect this from science classrooms. This is largely seen when writing lab reports; however, I do not want lab reports to be the sole writing exercise that my chemistry students participate in. Grymonpré et al. (2012, p.26-27) give examples of students writing informational responses to scientific prompts. The best part of these scientific prompts is that they are generated from student work. This helps students stake a claim in what they are writing. Not only do these student prompts help engage the class but they also are a great tool for teaching scientific writing. Making topics based around student work is an excellent way to make students accountable for their work and take pride in their writing.

However, it is not enough to assume that students will give do their best on assignments and not require assessment. Assessment is necessary for many reasons. Kane (2011, p. 287) quotes the International Reading Association and sums up the basic need for assessment when she writes, “Assessment that shows them their strengths as well as their needs and that guides their teachers to design instruction that will best help them grow as readers…”. Assessment is a useful tool, but it needs to be designed well. Two principles discussed in class were that assessment “should focus on learning” and “should include consistent and meaningful reporting” (Class Notes, 4/24/12). The first of these should seem obvious, but it is often not accomplished. It is vital that students are assessed in a way that promotes learning of the material presented in
Although it requires more work, multiple assessments are necessary to track a student’s progress throughout the course. The second relies more on feedback. Feedback is necessary for a student to understand what he/she is doing wrong and how he/she can fix it. I have learned from personal experience that feedback is extremely helpful, especially when the student has a chance to take the teacher’s feedback and use it to revise an assessment. If both of these principles are kept, assessment can be meaningful and helpful in the classroom.

Although it is nice to believe otherwise, learners will come to our classrooms from all walks of life. No student will be the same, and we, as teachers, should understand that. The classroom is built around the students, and it is important to understand that. In order for students to respond to the accommodations made to increase comprehension and help students’ literacy skills, the teacher must realize the large amount of diversity in the classroom.

A major factor in making all students feel welcome and to enhance a child’s education is to establish an appreciation for culture. Alvermann, Phelps, and Gillis (2010, p. 60) have this to say about accepting differences, “Creating safe environments that foster classroom appreciation of diversity does not mean engaging in neutral discussions in which feelings of conflict or issues of power are submerged in teachers’ and students’ making nice talk”. The authors go on to say that the best way to create a safe environment is to encourage expression and make students at ease when taking part in a discussion.

One of the easiest ways to do this is to look at diversity as a positive thing. Our discussion of identifying diversity in class took on a negative air. Words like “defect”, “deficit”, and “disruption” were used in the notes to describe the different types of diversity (Class Notes, 5/1/12). Instead of these three words, I believe “difference” is more appropriate. The word “difference” implies a change, but not a negative one. All students are different, even ones that
are physically or linguistically the same. We should promote an appreciation for diversity in our classroom and use it as a tool to enhance learning rather than see it as a hindrance to our curriculum.

I have realized that literacy is a far more complex subject that I had originally believed, and it certainly does not solely belong in an English classroom. I feel I have been taught the necessary tools to help my students learn to be scientific readers. Without this realization and education, I would have had a difficult time in the classroom when I encountered students whose reading skills were not as advanced as others. I am thankful I had the opportunity to broaden my horizons and add literacy to my spectrum.
References


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