Unit of Lessons: Safety in the secondary science classroom
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EDTL 611
July 21, 2005

I. Rational:

In the years that I have taught science, there has been a growing need to make all students understand science and the relevancy of science to their lives. Many students do not realize that in order to make informed decisions about things like pharmaceutical drugs, government environmental policy, how to build a house and many others they need to understand basic science and the safety issues in science. The sad part is, many students learn differently from others and need a different instruction or enhanced instruction. The “read this section and answer these questions” method of teaching does not enable many students to learn effectively. In fact, very few students learn effectively in this manner. A single classroom can contain students who can read and comprehend at the college level as well as those who have trouble simply decoding words (Tomlinson, 1995). This fact makes it paramount that teachers use different strategies to reach and challenge all their learners. Differentiated instruction can help a teacher do this.

Differentiated instruction is an idea that is supported by many different instructional strategies. I have decided to use things like “attention to real world experiences”, “emphasis on thinking skills”, “flexible grouping”, “group investigation”, and “stations” as well as others to enhance the achievement of all the students in my classroom (www.mcps.k12). With these different methods of delivering the curriculum, all my students with their different abilities should be able to understand the concept of safety in the science classroom and transfer that knowledge to the real world events that might impact them in the future.
I have also included reading literacy strategies within this set of lessons because of the large number of people who are not “functionally literate” in the United States today (Hunkins and Ornstein, 2004). I think by teaching my students to be better readers of the content (not just in English class) they will be better readers outside of school. Students need to learn and frequently use strategies that help them to pre read, read and evaluate the reading afterwards. Most of the strategies for reading literacy that I have used in this unit come from either Max teaching with reading and writing by Mark A. Forget or Subjects Matter by Harvey Daniels and Steven Zemelman. Both of these books offer sound, practical advice and strategies to teach students pre reading, reading a post reading skills.

II Summary:

I have put together a series of safety lessons, some created by me and some borrowed from others, which secondary sciences teachers can use to teach the relevant Ohio Content Standards. These lessons incorporate differentiated instruction techniques as well as literacy techniques to help all students in a classroom to succeed. The unit starts with a pre assessment to check what students already know and to get them thinking of the topic of safety in science and in the world. The next lesson in the unit consists of a reading selection from a newspaper that students will read and discuss. The discussion questions consist of one question from each of Bloom’s taxonomy levels. This allows for higher level thinking, but students are doing it as a flexible group so no one person feels intimidated by the higher level questions. The third lesson is a group investigation of substance identification and cleanup using MSDS sheets. In this lesson, students will use investigative skills to identify a spilled mystery substance and then “clean up” up the spill according to the MSDS specifications. The fourth lesson will be a video on safety that students will watch and then fill out exit slips to leave class on an overarching
question that comes from the video. The fifth lesson will consist of an anticipation guide on a reading selection about how mistakes or accidents in the science lab lead to great discoveries. Finally, the culminating project will be to represent what the students have learned in some sort of media format. The project could be a poster, power point, dance, song, or skit; whatever the student might choose based on their specific type of intelligence. The project and its rubric would be introduced early on in the unit so students could be thinking about what they might want to do at the end.

III. Conclusion

I wanted to develop materials that could be used by any secondary science teacher, who has diverse learners in their classroom. I think I have done that, using differentiated instruction and reading literacy as a base. Although I have not piloted any of the lessons, as it is summer, I will be teaching the unit early in the fall as part of my courses in Biology I, Environmental Science, and Earth Science. Each unit will be slightly different in the reading selection I pick to fit the nature of each class a little better. As a teacher, I always want to reach ever student and I think this unit helps me to do just that.