

  
December 2, 2005  
Science Ed. 201  
Professor Nelson & Gammon

### Learning Commentary

I have come to the conclusion that high school physics did very little, if anything, to prepare me for science in college. It is amazing how inaccurately a grade can reflect learning because I received an "A" in my high school physics class but I honestly could not tell you a single thing I learned. My teacher would stand up day after day and scribble down notes and equations on the board. My classmates and I would frantically copy down the notes as if there were some unwritten laws in a *Teacher-Student Code of Conduct* that required us to. What was I writing down? I had no clue.

We covered at least one concept a day; never investigating the reasons why. When asked to further explain an idea that no one understood, my teacher would simply point to the board and utter a mess of words that was even more confusing than what he had written down. There were so many ideas and equations flying around in my head that they started to all mesh together. The only reason I survived on test was because we were able to use a sheet of paper so I could write down the numerous equations and an example of how to plug numbers into each one. If a problem on the test differed greatly from the ones I wrote down on my piece of paper, I was in trouble. I did not understand how this could constitute learning. It was a simple procedure of fill in the blank and it really put me outside of the learning process- a spectator rather than a participant.

Coming into Science Education 201, I was really unsure of what to expect. The thought of taking a class focused around physics brought back the horror I experienced in high school. Would this class be a repeat of that experience? I desperately hoped not.

Becoming a teacher has forever been a goal of mine and I anticipated that this class would help in preparing me for the long journey that lay ahead to achieve this goal, and the fact that this class counted as a GUR was a major plus.

The first few weeks of class, I really struggled. My struggle, however, did not come from the difficulty of the material as I had expected, but from the way in which it was presented. Never before had I been in a science class where the ideas were not thrown at the class for their rapid consumption and memorization. The very first page of Cycle 1 Activity 1 stated “Developing Ideas” on the very top. Developing ideas? Weren’t the ideas already supposed to have been developed by scientists? When I think about my reaction to this now I laugh, but at the time I was extremely confused. It was one of the first times that I had been asked about my ideas on a scientific idea before it was presented to me. Fortunately I was able to overcome my shock and I continued with Activity 1.

The activity asked me to come up with two different ways to represent the motion of a car that over a short trip, sped up, maintained a constant speed, and slowed down. I tapped into my math knowledge and produced a speed-time graph and a T-table showing the speeding up, constant speed, and slowing of the car. I felt confident with my answers while they were on my paper but next the question asked me to share my ideas with my group members and then the class. Luckily I knew my group members, Drake and Nicole, so I felt comfortable putting myself out there and sharing my results with them. However, when it came time for our group to discuss our ideas with the entire class, I became very nervous. The confidence I felt just moments ago quickly vanished. How was I supposed to explain my ideas to a class full of strangers on a subject we had yet to

learn? As I watched the groups before us present their ideas, my nerves were calmed when I realized that it was no big deal.

Once my fear of expressing my ideas left me, I really began to enjoy the discussions we had in class. They allowed for me to learn from my peers because they often came up ideas different than those that I had thought of. Discussions also forced me to make sure that I actually understood the material because I had to have a firm grasp on my thinking before I could explain it to everyone else. The class discussions proved to be an essential and vital tool in my learning, which was something that I had never experienced before in a science class. In previous classes I was under the impression that since science, for the most part, lacks subjectivity, there should be no need for discussion.

Along with discussions, another part of the curriculum that I felt was essential to my learning was the order in which we learned. The activities guided us to discover main ideas about energy, force, light and heat before they were actually presented. In high school, my teacher would simply state what the main ideas of a chapter were. Then we would do a lab that would show us exactly what he said was going to happen. The lab did nothing to reinforce the learning of the information because we knew exactly what we were supposed to see. It did not even matter if the experiment actually produced the appropriate results because we knew beforehand what we were supposed to get from it. In this class, the PET curriculum reversed this order. This meant that I was actually learning new information from the experiments. Then I would formulate ideas about the main topic based upon the information the experiment presented and the ideas I initially developed. Finally, I would be able to compare the ideas that I put together with those

that actual scientists have found to be true. This reversal of events may not seem like it would make that big of a difference, but it really did.

Through frequent class discussions and the order in which the activities were presented, the PET curriculum allowed for me to take an active part in my learning. While I cannot recall one thing I learned in physics in high school, I guarantee that I will never forget the information I learned in this class. I took part in discovering scientific ideas, rather than having them handed to me and it is a great feeling to know that for the first time I actually learned, rather than memorized.

*I hope that you will help your students learn in the same way! The job*