

Philosophy of Teaching

I feel that the most important thing I can teach my students is that science is an ever-changing body of knowledge which can be revised by any human (even themselves) through the scientific method. In everything I do as a teacher, I try to present, demonstrate, and allow students to discover this: my philosophy of teaching.

First of all, science is ever changing. I feel that part of the excitement of science is in this changing aspect: that science is not memorizing facts, but understanding ideas.

In the classroom I make extensive use of current periodicals such as *Science News* to give my students that sense of change. I also emphasize in lab work that students results, whatever they may be, are what is correct. Students are expected to report what they find even in disagreement with their textbook because they may be discovering something new.

Secondly, science is a body of knowledge represented by the textbook. Despite its ever changing nature, there is a certain part of science which is common knowledge and standard theories. This is the part of science which students do need to know and memorize. It is the foundation upon which the changing world of science is based. It is the giants on whose shoulders Newton stood that he saw further than most. Any scientific classroom would be remiss in omitting the established body of knowledge.

In the classroom I emphasize readings from the text as the main source of common knowledge. Students are expected to remember certain facts, such as vocabulary, and understand other concepts such as organizing theories of the nature of the

universe. These are not only demonstrated in, but also taught through tests. For all I have against testing, there is something to be said for the studying for a vocabulary test that does get the words into the brain.

Third is revision, represented by the scientific experiment. Not only are established laws subject to revision through professional science experiments, but students' understanding is subject to revision when presented with contradicting evidence.

In the classroom, this need for evidence can be shown in many ways. First of all, in lecture students are actively encouraged to challenge any fact and ask what evidence supports it. Second, when I take over the classroom I intend to put up a sheet entitled "this I understand...now prove it to me" where students can list such questions in addition to the "I don't understand this" and "ways you can improve lecture" post-its. Finally, I am a big fan of running the same experiment on more than one day to examine how one can refine one's results.

Finally, we have the human being who is there thinking about new theories, establishing new ideas, and running experiments. Science is a human endeavor with its own history.

In a scientific classroom this can be demonstrated through biographies and experiments which allow the students to realize that they too can establish new scientific theories.

This is my philosophy of science teaching, and it is what I attempt to demonstrate in the classroom.