A TEACHING PHILOSOPHY by Michael "Lucky" Voiselle

We all know there is an enormous need in education to turn students on to our material and make it relevant to them. Students do not like science and math because they perceive it as being difficult accompanied by a lot of work that they are unwilling to devote the time to master. Yet we know we must develop an appeal for our subject areas. Students are avoiding anything beyond the minimum science and math requirements to graduate from high school. And with due respect, they do have some valid reasons for this behavior. Much of their educational experience is in the passive mode. Most teachers lecture, many students take notes. All teachers caution students to study at home, some students do homework. All teachers give tests, most students take tests. All teachers give grades, students take grades home. If we do not change our educational strategies, we will continue to do our students a disservice when they enter today's workforce unprepared.

We all are aware of the world's employment needs. Potential employers of all types want workers that are literate, ones who have good communication skills, ones who can do mathematical computations, ones who can reason and interpret, ones with problem solving capabilities, and workers that can cooperate in-groups. We know that industry has had to retrain our student population once they enter the work force. Many foreign industries have had to import skilled workers from their own countries to fill management and skilled areas because of a lack of U.S. students that qualify with their standards.

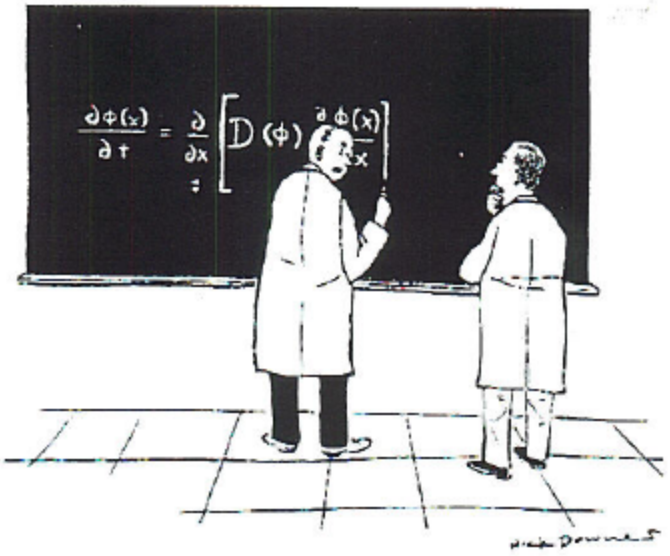
At the present time the average job is so skilled it requires two years above the high school diploma to attain. That means the number of unskilled jobs that were available in the 1960's and 1970's are not available in the new century. Technology has advanced to the point where student needs are met only by teaching them a different way than the traditional lecture method. We must invite the world into our classrooms.

What can educators do? We have a major dilemma. We must maintain tough standards yet we must capture the attention, the interest and the desire of our students. We must develop an attitude that makes a person want to know our material. All of us should realize that when students want something they develop a method to attain it. We must make it relevant for them. We must make it so real they can readily identify with it.

In my opinion, to help solve this dilemma we are facing five thoughts permeating our educational structure at this time that need to be seriously scrutinized or eradicated all together.

1. We need to wipe out the notion that we must provide easier science and math courses at cheaper prices. We all need to avoid bandwagons like the organization called SNOT; Science Not Overly Technical. They offer Physics Lite, Biology Lite, Bud Lite, Chemistry Lite, and Natural Lite, at cheaper prices.

   One of my principal came to me one day and relayed to me that we needed to graduate more students. I looked puzzled and said, "What! Why did you ask me that? There are other teachers on the hall." He simply looked at me, smiled and, walked away. I taught chemistry, physics, and trigonometry. He implied that I was presenting my material at a level that prevented students from wanting it. I was insulted, found this cartoon a day or two later, entered the building unseen at 6AM, and put a copy of it on his door.



"No, I can't dumb it down."

   My classroom door had a little square hole with a Plexiglas window in it. The principal came down and peered through the little hole along about 2nd period. I caught a glimpse of him out of the corner of my right eye. I ignored and continued giving guidance and monitoring my

   student's activities. As time proceeded, a student attracted my attention and said, "Mr. Stamps is at the door." This happened to be

one of the most helpful students in the class. The type that aided in passing out materials without being told. The type that stayed after class to help clean the room. This is the type of student that you did not want to hurt their feelings. I got out of it as gracefully as I could, by saying, "Let's pay attention to what we are doing; I'll pay attention to what he is doing later. Okay?"

He knew where that cartoon came from… He loves me… He just did not know it at the time.

2. We need to eradicate the presenting of our material as textbook definitions, a sentence fragment or a quick simple definition. This gives rise to far too many incorrect concepts and misconceptions. We as teachers must know our subject so thoroughly that we can get the true meaning across on a concrete level. Let me give an example here. A reputable toy company dispenses educational aids for science teachers. They package a toy accompanied with a science manual with some great experiments to explore that toy.

One of the booklets offers a balloon powered car followed by the science concept, 'for every action force, there is an equal and opposite reaction force.' This is a classic example of Newton's third law of motion. You blow up the balloon that is attached to the car, place the care on the floor, and release the car. As the gas is released from the balloon, the car goes in the opposite direction.

This toy company has great components for educational assistance. However, no one is infallible. My emphasis is on presenting material

in a correct manner that will minimize misconceptions in connecting thoughts for connecting concepts.

In reality, this demonstration is not a true example of Newton's third law. This is two examples of that law. There is one action-reaction with the air and the balloon and another with the cart's wheels and the earth. The balloon's force acting in the opposite direction of the wind leaving the balloon imparts a force to the cart. The cart's wheels in turn must impart this force to the earth. The earth in turn must transmit an equal and opposite force to the wheel. The addition of the earth's small force to the cart plus the force given by the balloon is enough to overcome inertia and friction. The cart would not move unless the earth, represented by the floor, gives a small shove to the wheels as the wheels impart a small force to the earth. Newton's third law should include, "For every action force, there is an equal and opposite reaction force on the same system." Therefore, one can see there are two systems acting in similar directions and are additive.

3. We need to do away with the thought that we teach only our subject. Science is not isolated from history, English, or math. Our subject is not isolated from the rest of the world. Subjects need to be integrated to form performance tasks incorporating all discipline areas. We need to dispel preconceived notions that this is a science class, not language arts. I do not know how many times students in physics class have said, "This is not English. Why are you making us write in complete sentences? Why do we have to watch out for spelling? You and I realize people need communication skills. Otherwise the best minds in the world cannot convey their thoughts. We also realize that historical time periods need to be understood as they reflect the needs of the times in which prominent people developed their philosophies and concepts. And we realize that mathematics is the language of the sciences. Why do we keep separating them into fifty-minute blocks?

4. We need to stop teaching our subject at such a high level that everyone is going to a four-year institution to major in our area as a theoretical physicist or mathematician. I have had more success with an integrated, hands-on approach that I stumbled upon midway into my teaching career. As a testimonial, I can share that during my first

16 years of teaching, no student went on to college to major in any challenging areas of science. I was fairly traditional teaching calculus-based physics and upper level chemistry classes, sprinkled with algebra and trigonometry throughout the years.

My principal came to me one day and asked me to teach Principles of Technology, a course perceived as a lower level science course for non-college bound students. He stated that this course suited my personality. I agreed to try for one year. This course was designed to get the student so actively involved that they almost forget they are learning physics.

Principles of Technology was introduced to South Carolina around 1985. We were using the CORD materials developed by the Center for Occupational Research and Development out of Waco, Texas. As I watched the students during my first year, I was amazed at how excited they were putting motors, pumps, pulleys, power supplies, and a large variety of equipment together to solve problems that they would encounter in the real world. During this exploratory 'play-time', they were developing math and communication skills directly needed to make them competent in work related areas. They were intuitively developing ratios, proportions, and solving word problems. Skills they would remember and use again and again. Certain students would ask questions that would allow me to take them aside to dry erase boards and allow me to share how certain math and science relationships were derived and by whom. I would consult encyclopedias, biographies, and internet search engines to get historical backgrounds on each mathematician or scientist to make them seem more like real people.

Students seldom think we, as teachers are real people, let alone science icons like Albert Einstein or Neils Bohr. How many times have you heard the phrase, "Wow Mister Thornblade, what are you doing in this grocery store? You actually have a shopping cart and are putting groceries in it?"

Once my students realized that my friend Albert Einstein grew up during Hitler's rise to power and the beginnings of the industrial era, they can understand why he did not respond to adults very well. This was one reason Albert was labeled as 'slow' by his instructors and

why he could not function in a traditional school setting. Once the students realized that Neils Bohr had to dissolve his Noble Peace Prize medal in an acid to keep it from being detected by the German soldiers as he escaped from Germany, they develop an identity with him. These types of stories lend some credibility to the human origins of these former icons. Scientists, inventors, and mathematicians, become real people with their own sets of problems with life. However, they had traits of persistence, diligence, and desire to spend a great part of their lives searching for answers to puzzling problems or curious situations. (I would like to see many of our scientists idolized as much as present sports figures or screen stars.)

I witnessed how turned on my "applied physics" students became. The class grew from one the first year, three the second year, and five thereafter. There was a two-year period where I volunteered to teach all seven periods throughout the day. I changed my tactics in my regular classes. They all became almost lecture free to make way for exploratory, hands-on, group work. During my last eight years of teaching I had eleven people go to college to major in some major facet of science. Nine have sense graduated and none have dropped out. It was my attitude that had changed. My personality was still intact. I had to stop myself from telling all the answers as I incorporated the changes in my classes.

5. We need to eradicate the notion that a teacher is a spoon-feeding dispenser of knowledge. We need to develop a thirst, a desire in students to encourage them to want to seek knowledge for their own sake and future benefit. Too many students have the notion that teachers should simply tell the students what the teacher wants them to know. This is the way it was done in the past and you should still tell me now. Far too many parents agree. They say, "Just tell my child what you want him to know and I'll make him do it. I happen to believe in the Lebanese profit, Kahlil Gibran's thoughts on teaching. He wrote, "If a teacher is indeed wise, he does not bid you to enter the house of his wisdom…But rather leads you to the threshold of your own mind." I do not care that my students know what I know. I do not care that they think I'm extremely intelligent. What matters to me is to give them a love of learning by

doing, by exploring, and by fixing what they tried the first time, modifying it a second, a third, and a forth time if necessary.

In closing I offer these thoughts. It is extremely difficult to say that any one teaching method or any teaching style is the best for all teachers. Because this is just not truth! Some students like a straight forward, no gimmick presentation. Some like to be led step by step throughout the whole class process. Some love the freedom to tinker, explore and use their own intuition. However, I feel most students like a mixture of teaching styles.

No matter what style you adopt that fits your personality and your students, you still need to find a way to get most of your students to learn and enjoy doing it. This brings us to my thoughts of what an excellent teacher is all about. Styles vary, but several characteristics are common.

- They know their subject well…….and it is obvious!
- They are incredibly enthusiastic about teaching their subject…….and it is obvious!
- They like the people they are teaching……and it is obvious!
- They are creative…….and it is obvious.!
- They have a sense of humor……and it is obvious!
- They care……and it is so incredibly obvious!

Remember children are born with a natural sense of curiosity. Often times we take that away from them. Rather than let them dig up bugs, we tell them not to get dirty. Instead of asking why a spoon banging on a glass sounds differently than one hitting on a pan, we tell them not to be noisy. Kids are VERBS. Learning should be a verb for kids. In physical education you do physical activity. In music you play instruments. In art you draw. You go to science class and you should be **doing** science!!!!!!!!!!!!yeah buddy.