

The Spirit of Teaching: Chemistry and the Martial Arts

Reflections for Phoenix Instructors Program

by Stacey E. Boyette, PH.D.



In 1988, Robert Fulghum released a book entitled All I Really Need to Know I Learned in Kindergarten. Perhaps you remember it. It seemed to be everywhere, but I never really could relate to it. My recollections of kindergarten included playing Peter Pumpkin Eater's wife in the school play (I had a fabulous puffy costume with a bonnet) and crying every time my mom was even a few minutes late to pick me up. If I wrote a book, or maybe just an article, the title would more likely be "All I Really Need to Know I Learned in the Dojo (training hall)." My experiences training in karate beginning at the age of eight shaped my life and informed my teaching. Lessons about respect for others (of higher or lower rank), about anger management (countless laps were the remedy for my bad temper), and about proper execution (regardless of the undertaking) were woven into the fiber of my being as I grew through my formative years. As my training continued into adulthood, lessons from the dojo continued to come and many of them have found their way into my approach to and methods of teaching.

When teaching karate or chemistry, my goals are the same: 1) Transference of knowledge and skills and 2) Development of each student. In both cases, the subject is simply the vehicle for self-discovery and personal growth for the students, and, often times, for the instructor as well. Whether students remember the details of a chemical concept or the nuances of a combative technique is less important than the experience of the course itself. Self-knowledge is gained, new mental and physical strategies are developed, and new habits are formed through the study of an academic or martial discipline.

“Everyone works, nothing is free, all start at the bottom.” ---Peter Urban, Founder USA Goju

Perhaps the last part of the quote should be changed to “all start at the beginning.” Countless potential students have entered a martial art school and told the instructor what techniques he or she thinks he/she needs to learn. Likewise, many chemistry students feel that they know what they need to know based on science camps, previous courses, or future career plans. The truth is that in order to build a strong foundation the journey must start with the fundamental facts, theories, or methods of striking. The fundamentals are forged into the mind or body by repetition of countless practice problems and enumerable strikes, kicks, and combinations. The potential side-effect of working on the basics and pushing oneself in this way is the development of self-discipline, work ethic, and tenacity. There may even be an epiphany moment when the student recognizes that knowledge or skill cannot be acquired instantaneously, rather it can only be obtained through processing, digesting, and integrating the new information into practice. There is a famous story of an interview with the late karate master Mas(utosu) Oyama in which he told the reporter to come close so that he could tell him the true secret to the martial arts. The reporter leaned in and the master spoke, "Sweat, sweat, and more sweat." In the same way, chemistry and other academic pursuits require mental perspiration.

“Fall seven times, get up eight.” ---Martial Arts Adage

It is important to allow students to “fall down”, to take a risk or try something difficult and to experience failure. That is not to say that they should be thrown in the deep end without a life vest. Students should be given a solid foundation of knowledge and skills and then be challenged to try techniques or solve problems that are just beyond their self-set limitations. What they perceive as failure may be only a minor setback, but it provides a valuable learning opportunity for them. Throughout this process, there will likely be frustration and disappointment, and the student will come to know their own emotional responses, how to manage and persevere through them, and how to achieve success. This is a critically important exercise, as too many times students are frozen by the fear of failure and quit before they have even started.

The primary roles of the teacher in all of this “falling” are to encourage responsible risk-taking, to prepare the students well by providing the necessary tools for success, and to pick challenges appropriate for the level and abilities of the student. The chemistry classroom or the karate dojo should be maintained by the instructor as a safe environment for self-discovery, without fear of judgment or ridicule from others. In this setting, the teacher may also serve as observer, pep-talker, listener, coach, strategist, and a variety of other functions.

Finally, it is important to avoid prolonged frustration for an individual or a class since this may lead some students to shutdown or gain a permanent distaste for the subject or activity. If the instructor senses that student frustration is building to a level that will impede progress, she or he may want to review some familiar material or techniques with the student(s) to restore confidence before returning to the more difficult task at hand. This method facilitates the developmental process by helping the student to relax the mind and body and to try softer. Experiential learning is irreplaceable in academics or physical activity. Students must learn how

they individually process information, how a technique feels in their body, and how to deal with adversity.

"One's humility should grow along with one's strength." ---Chojun Miyagi, Founder Goju Ryu

This quote is the antithesis of the ego-driven society we live in today and can be broadened from humility to include empathy and compassion for others. Often times a new black belt begins to feel that his or her training has reached a plateau, that they are not learning anything new, or that they are no longer being fed. My answer to them is always the same, "Perhaps it is not about you anymore, maybe it is time to give back by helping others gain competence." If these novice black belts think that they will not grow from such interaction, they are mistaken.

All throughout their training at the Madeira Dojo, girls are encouraged to work in pairs and to help each other become proficient at various techniques and combinations. Once a girl enters her second or third trimester of training, she is expected to model dojo etiquette and to mentor the newer students. She should never intentionally strike or injure a less experienced trainee and should always be the first to put away the equipment at the end of training. The dojo should be a safe environment built on cooperative effort. Similarly, girls in the chemistry classroom are often encouraged to work in small groups or pairs to share their competencies and complete a task. Laboratory experiments provide a particularly good opportunity for students to share information and to guide each other along.

On a broader scale, girls who seem particularly adept socially are sometimes asked to work with others who seem less comfortable in their skin. In the adolescent world of "mean girls", this is one way to make students work outside of their social cliques and to teach empathy for others in their immediate community. The lesson here is that once the student has reached a certain level of proficiency and self-assuredness, there is a responsibility to reach out to others to share knowledge and make other people feel more comfortable. The student does not need to demean others in order to feel good about herself.

"Laugh, and the world Laughs with you." ---by Ella Wheeler Wilcox in "Solitude"

For any martial artist, relocating also means finding a new place to train with a new group of training partners and a new instructor. It is sometimes difficult to find the same system of martial art or even an instructor with a similar philosophy to your own. I have been fortunate enough to have three wonderful instructors, each of whom treated me like a warrior, not like a woman or a small person, and pushed me to develop physically, mentally, and spiritually. It was my third sensei that impacted my teaching style most profoundly. After 15 years of previous training, I learned that it was okay to laugh in the dojo. Although the training was rigorous and the standards were high, the sensei kept a sense of humor and would frequently lighten the mood with a comment or a joke. The sweat would be pouring, but the students did not feel oppressed by it due to the tone set by the instructor. My experiences with him changed the way I teach in the dojo and in the classroom.

In the classroom, it is important to keep a sense of humor about you, especially on days when lab is a disaster and the students seem to have forgotten everything. I have found that it is

possible to interact playfully with a class and yet maintain control and authority as the teacher. I set a serious tone early on in my classes with very clear boundaries and then relax the atmosphere according to the maturity level of the group of students. There have been classes that could never control themselves enough to allow the lighter interaction between student and teacher. However, if everyone is working hard and behaving appropriately without constant reminders, then the student-teacher relationship can become more familiar. The tone of the class has a great impact on a student's ability to absorb new material and to take risks.

"Ishin Den Shin: From My Soul To Your Soul" ---Helen Nakano, Founder U.S. Naginata Federation

My friends that are not teachers frequently ask me how it is to teach the same subject year after year. Their assumption is that teaching would be repetitious or boring, but no good teacher teaches the same topics in the same way year after year. Even if there is little variability in the curriculum, the students DO change. The game of teaching is to figure out how to reach THIS group of students. How can I explain this concept so that THESE students can grasp it? What are their collective and individual points of misunderstanding and needs for success?

The game of teaching involves trying to figure out what tactics, teaching methods, drills, and activities will work for each class and each student. It is important to explain things in a variety of ways using variable approaches, to let the students try to answer questions or practice skills, and to re-explain the topic or technique in different ways until some clarity or proficiency is gained. Another facet of the teaching game involves figuring out how to appropriately manage the ebb and flow of the work load or tempo in a class to achieve maximum performance; that is, knowing when to push and when to let up according the energy level of the students and the rhythm of the term. Perhaps one of the most important parts of the game includes modeling and encouraging respect and compassion for others at all times and building trusting relationships with students.

The rewards in teaching karate or chemistry are many. Observing student growth and maturity that transcends the subject matter is one of the biggest rewards. In the dojo, growth can be obvious in a single trimester. In the span of two or three months of training, a girl may begin to carry herself more confidently, may become more disciplined, or may open up more socially in addition to having learned how to move her body and how to defend herself. In the chemistry classroom, the development of a student builds over the course of the entire school year and may only be obvious as the year draws to a close or as the next school year begins. As important as the chemical concepts are the critical thinking skills developed, the problem-solving techniques acquired, and the cooperative lessons learned. All teachers live for the "light bulb" moments in students, moments when they finally grasp a concept or feel the proper execution of a technique in their bodies, but the greatest reward of all in teaching is to see students go on to be happy, healthy, kind, and successful adults.

Hombu note: Stacey Boyette is a highly skilled and experienced practitioner in karate and Kobudo. She holds high dan rank in the Phoenix Karate-do Association Kyokushinkai and USA Goju-ryu. She has an earned doctorate in chemistry from the University of Florida and currently teaches at the prestigious Madeira School in Virginia.