

### Teaching Philosophy

We have all heard it before; “I want to change the world”. Some think that people who utter such phrases are just dreamers. Although it is often overlooked, many scientific advancements were made by these ‘dreamers’. Among the discoveries that originated from creative insights are the benzene ring, the electrical nature of nerve impulses, and the theory of relativity. Each of these findings has reached beyond the individuals who discovered them and into the lives of everyday people. *Those ideas changed the world.* However, an idea doesn’t have to ‘change the world’ to be important, but may instead create a ripple effect that can positively influence others. Promoting students’ desires to give back to society is readily achievable when you focus on an individual. As mentioned above, their inspiration will extend to the community and beyond. In order to facilitate success in science I help students develop three basic skills; **collaboration, creativity, and critical thinking**. Armed with these skills students will have the ability to augment their own lives by broadening their perspectives and successfully learn to apply scientific concepts in a broad range of situations.

The ability to **collaborate** allows us to celebrate diversity and stand on the shoulders of our peers. As a group, we are more than the sum of our parts. To promote team work, I implement team based learning and encourage students to seek input from their peers. This serves as a learning opportunity for both the students asking questions, and those who provide answers. Teamwork also promotes the skill of articulation. Successfully wording a question and answering it in a way that is understandable is an important skill that permeates all aspects of a person’s life. It is my goal to help students realize that it is ok if they do not know something and to ask for help. Ultimately, the students learn to value diversity and help each other, but also learn to appreciate the world we live in through a different set of glasses.

Generating **creative** thoughts and the ability to think abstractly about a topic are intimately related. To promote abstract thought and imagination, I provide many examples and scenarios to aid description of ideas. Furthermore, I ask the students to contribute to these discussions and in active learning exercises. I specifically encourage them to share insights they may have from their own lives. In addition to helping the students think more about how the material applies to their lives, this system also exposes those who prefer to listen to scenarios they may never have thought of before. Science is not boring. Molecular biology and biochemistry are realms of abstract thought with wonderfully complex and infinitely interesting

phenomena just waiting for the next generation of scientists to challenge old ideas and create new ones.

**Critical thinking** is a skill that naturally develops from engagement in collaboration and creative thought. When students experience the freedom involved in conversations with their peers and observe how one's ideas incite imagination in others, they begin to think critically about subjects. The students begin to ask themselves questions such as, "Does that statement match what we have learned?", or "Wow, that is very interesting, what if I take that thought a little bit further?". In science critical thinking is a required skill. My goal is to promote the natural development of critical thought; giving the students confidence and freedom to share ideas with each other in a collaborative setting. In this way I hope to influence individuals, only then can we make the world a better place.