Citizens of Tomorrow: Every Man a Scientist

A Philosophy of Secondary Science Education

Education is often loosely defined as the transmission of knowledge, information, and experience from one generation to the next. But education is much more complex than the simple transmission of information. If teaching is only providing students with “facts”, a process would have been developed for learning by osmosis years ago. The reality is that the responsibility falls on the teacher to discover through trial and error how to teach students information and more importantly, how to prepare them for the future. What information should that be? What should we be preparing the next generation to be? What will it take for them to be successful individuals capable of taking care of our world?

Science is a cornerstone of modern society and the responsibility to educate young adults on the importance of science lies with science educators. Without science, there would be no progress, no advancement. Science is a part of everything and everything is a part of science. The role of instilling a passion for science early on lies with parents and educators. Creating a classroom environment where inquiry and curiosity is encouraged is the first and most fundamental step to teaching students to embrace science as a fundamental field of study. Science is more than basic content knowledge, more than just principles and laws. It is a way of thinking, a way of looking at the world around us. It is about asking questions and applying content to practical situations. It is never being content with a plain answer and always asking “Why?” The world of science is filled with independent learners that view the planet through a lens of inquiry. If a teacher can show a student the way into this place, this way of thinking about life, the next generation will be prepared to face whatever challenges lie ahead. Scientific thinkers are by nature life-long learners, open minded and independent, ready to face an inevitably diverse and problem ridden world. This is certainly the beginning of a recipe for success of our future citizens.

Teaching students content knowledge and how to be a scientific thinker is not enough to fully prepare adolescents for their lives as adults. Every student has the potential to succeed in every avenue of their lives. For some this success comes naturally but for others, they must be shown the way. Students should be taught the necessary life skills to prepare them for higher education and life beyond formal schooling. One of the most important life skills a teacher can instill in a student’s life is the knowledge of not only what to learn but how to learn it. The majority of high school students are continuing their education at the college level yet most students are not taught the skills and tools for success in higher education. Students need to be taught to problem solve, to think independently, and most importantly, how to learn. Much of our earlier education is spoon fed but students need to be taught self reliance, especially at a time where they still have high school teachers to use as a safety net. Students should be taught how and encouraged to discover the most effective ways for them to learn as an individual, no matter how the material is presented by the instructor. Our students are the next generation--they are going to be making the decisions, writing the policies, determining the size and shape of the future. As educators, it is our responsibility to ensure that the next generation is prepared to take up the mantle as leaders of tomorrow.

Education at its simplest is opportunities—the opportunity to impact the next generation through their education, the opportunity to make a difference in every single student’s life, and the opportunity to help equip students with the tools and skills they need to lead a productive and successful life. Learning how to think is the essence of science education and learning how to be a capable contributing citizen is the essence of all education. Bill Beattie said it best, “The aim of education should be to teach us rather how to think, than what to think-rather to improve our minds, so as to enable us to think for ourselves, than to load the memory with thoughts of other men.”