

My Earth science educator story – John Carpenter What I did, why I did it and what happened

In Junior High School, I saw a film about archaeology and something clicked. I could have a career where I could study the earth and be able to work outside. Unfortunately there was no opportunity in either Junior High or High School to study earth science, but I loved chemistry and entered Rice University as a chemistry major. In my second year at Rice University, I took my first geology course and realized that as a geologist or geochemist, I could work outside part of the time and in a laboratory part of the time. In 1958 I married Charlie.



John and Charlie Carpenter, 2008.

In Graduate School I focused on geochemical studies for both my masters and PhD studies. Upon completion of my PhD, I took a temporary job and while working there, I was contacted about a teaching position in geology at the University of South Carolina. I took that job but expected to stay at USC for about three years. That was in 1966. I retired from USC in June of 2000.

I enjoyed teaching geology and geochemistry to college students and doing geochemistry research. However, in 1967, South Carolina mandated that earth science was to be taught in the 8th grade. Teachers, however had virtually no subject matter background in that area. Along with a colleague, I received my first grant in teacher education from the National Science Foundation. That

program was very successful and we were funded for three additional years. I discovered the joy in working with teachers. Eventually, with the encouragement of my Dean, I dropped my geochemistry research, to work almost exclusively with teachers at all pre-college levels. In 1973, I was granted a sabbatical leave to work with the Earth Science Teacher Preparation Project (ESTPP), in Boulder, Colorado, which was a career-changing event in my life.



Undergraduate fieldwork, 1975.

When I returned to USC, in the summer of 1973, I began teaching an undergraduate course in Environmental Geology to two cohorts – undergraduate students and pre-college teachers. As a result, I began to realize the severity of the environmental problems affecting the Earth. Because of the ESTPP experience, I completely revised all of my courses. Introductory science courses at USC were typically taught by lecture with some laboratory work and were failing for many reasons. I decided to focus on the environmental earth science course. I restructured my 200+ student course into a 3-hour block, once a week; not just lecturing but also utilizing small-group discussions and service projects and other learning activities. The restructured course was an instant success and I taught several thousand students using this approach until my retirement in 2000.

With the assistance of several graduate students, I developed and implemented a doctoral program more appropriate for people who wanted to teach geoscience courses at the college level, but not in a research-driven institution like USC. That alternative doctoral program still exists at USC.

With assistance from some faculty and graduate students, we also developed a master's degree program for pre-college science teachers that included more course work in the sciences and less in traditional education courses. This program has been revised but continues to exist.

During this time, I decided to change my career from being a science research professor to a science professor engaged in geoscience education research. Surprisingly, my Dean supported this change. He counted all grants received and papers published on par with grants and papers from my geochemical research.

In 1983, I proposed establishing a specific unit within the university designed to develop scientifically literate and compassionate prospective and practicing teachers of science. I approached the same Dean who had previously supported my non-traditional activities with a plan to establish a Center for Science Education, in the College of Science and Mathematics. Once again he agreed with the concept and together we managed to have the Center officially established in late 1983. In January of 1984, I was named Director of the Center, a position I held until 1999. Almost immediately, the Center began to expand and I needed to add some people. Undoubtedly the most important hire was Phil Astwood. Phil had been my student while working on his masters and his doctorate. He left for about ten years to teach at Winthrop University in Rock Hill, SC. In 1986, I asked the Dean to bring Phil aboard full-time. He said yes, Phil said yes and the rest, as they say, is history. There were problems, of course. But for the most part, I had about fifteen golden years as

Center Director. During that time we accomplished more than any of us could have imagined. The Center still exists at USC.



With elementary students, 1995.

In 1993, I participated in an international Geoscience Education and Training conference in Southampton, England. In 1997, I was a co-convenor of the Second International Conference on Geoscience Education, in Hilo, Hawaii. The third geoscience education conference was held in Sydney, Australia in 2000, where the International Geoscience Education Organization came into formal existence and where I was presented an award "for Distinguished Contributions in Earth Science Education."



Retirement with the University of South Carolina, provost, 2000.

In 2000, I retired as a Distinguished Professor Emeritus. For about 10 years thereafter, Charlie and I continued to work as consultants in science and mathematics education. I could not have accomplished any of the above without Charlie. I also thank the University of South Carolina and especially my past Dean, Dr. Jim Durig, now retired. I don't

think many institutions whose goals were and are still to be considered a major research institution, would have given me the opportunities that USC did. My geology colleagues accepted and rewarded my teacher-education activities. I will never forget and will always cherish the ESTPP work environment I experienced in Boulder. Without the support of several tens of graduate students and faculty from other departments, the Center could not have taken off as it did. Special thanks go to my closest professional colleague Phil Astwood. I have also had the great privilege to work with several hundred colleagues from all over the world. Two, however, have had a great influence on me - Ian Clark and Chris King. The people who have my greatest respect are the pre-college classroom teachers of science, but more importantly of students, with whom I've been privileged to work with.



With middle school teachers, 2000.

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