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Some Thoughts from a Food Science and Technology Educator

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One of my emphases as an instructor has been to help others rationalize how scientific and technical concepts integrate with each other, and why they always appear as a logical consequence of historical evolution and previous experience. For instance, food is indissociable from physical existence and preservation of Humankind—and is so seminal for life that our distant ancesters underwent a culture of subsistence, via harvesting of wild plants, fruits, and grains, and hunting of wild animals, just to ensure supply of basic nutrients to grow, survive, and reproduce. As the supply of food became more predictable and abundant via agriculture and cattle raising, the sensory effects associated with food intake gained importance—and the act of eating eventually acquired social meanings, ranging from a symbol of family union, through distinction between population groups, to tokens of hospitality and friendship. More recently, experimental and epidemiological evidence of health outcomes of regular ingestion of (nutraceutical) ingredients as part of a balanced diet has brought about a 3rd role of foods; that is, delaying incidence of such chronic diseases and health conditions as cancers of the gastrointestinal tract, cardiovascular diseases, and neurodegenerative conditions. The above set of thoughts therefore illustrates the overall structured view I have for decades cultivated, encompassing areas of knowledge I was exposed to—certainly a consequence of the parental education I was fortunate enough to receive, which helped me become better as both an educator and a person; as Anthony d'Angelo (1995) stressed, "*develop a passion for learning; if you do so, you will never cease to grow.*"

I have placed another emphasis as an instructor on ethics associated with food technology practice, as part of a wider set of societal challenges to be addressed by Man and for the ultimate benefit of Man, now and for the generations to come. Recent decades have indeed witnessed more and more sophisticated techniques to detect harmful components and trace them back through the entire food chain, and to *in vitro* and *in vivo* test their effects following ingestion; furthermore, increased citizens' awareness of the relation between diet and well-being has led to stricter and stricter specifications on safety and nutrition grounds. Meanwhile, an ever-increasing world population, along with uneven distribution of production capacity and postharvest or postslaughter logistic structure to preserve, process, and distribute foods have created concerns about food security (now that major milestones have been achieved in the everlasting quest to win the food safety battle). Nelson Mandela's (1994) claim that "*education is the most powerful weapon you can use to change the world*" is quite appropriate here; the social conflicts of the future will no longer be caused by mere goals of personal power and economic dominance, but instead by the need to access an adequate food supply (including drinking water). Any direction selected will likely constrain the future of supply and demand; food and water will surely become the final frontier of Humankind, so every effort to educate future decision makers in food science and

technology issues should tackle integrated responsability and personal ethics via a "*think globally, act locally*" strategy—as I have consistently attempted to communicate through so many classes taught, and so many lectures delivered worldwide.

For almost 3 decades of active teaching in the field of food science and technology, I have enthusiastically defended in several fora, and materialized via many distinct ways that the major role of a Univ. is to educate students so as to help them become mature, trustworthy, competent, diligent, and active citizens of society, both in technicoscientific skills and in human values. These goals have permeated through my educational philosophy, and have comprehensively been conveyed to hundreds of undergraduate, graduate, and continuing students. In addition to contributing to the design and actual teaching of several courses in food science and engineering, I have consistently tried to make a difference in defending that teaching possesses an intrinsic and unique impact upon professional training and personal development of students. This comes from the concept that knowledge can be transferred through textbooks and other audiovisual aids, yet main ideas and key concepts need to be communicated to the student in an organized, logical, and interactive fashion—by placing critical thinking as a given.

I strongly believe that the human touch is seminal in education, because it provides a personal link and allows for the telling of (what Ted Labuza would call) "*war stories*"—examples of both failures and successes in the real world of the food sector. This direct use of critical thinking goes beyond textbook level, to arousing curiosity in the subject matter at hand; the students remember these stories, and then more easily learn the concepts behind food science and engineering problems. On the other hand, teaching should aid in shaping citizenship, by closely linking engineering training to cultural values; as Malcom Forbes (1984) asserted, "*the purpose of education is to replace an empty mind wih an open one.*" I have accordingly established and honored extensive teaching and mentoring commitments to my students, and have been willing to teach all courses deemed necessary by my academic institution. Such an experience has been rewarding from both personal and professional standpoints.

If asked for practical advice to gain students' attention and enthusiasm, I would refer to basically 5 keywords (*ROSIS*, for short):

(i) **Reality**—let classes develop as rationalizations of students' own past experiences, thus enhancing applicability; (ii) **Originality**— go one step beyond published texts, and incorporate unique examples that make a difference; (iii) **Suspense**—build lectures as detective plots that gradually attract interest, until the climax of conclusions is attained; (iv) **Integration**—tie scattered ideas from disparate fields of knowledge through fundamental concepts, side by side with a synthesis methodology; and (v) **Simplicity**—avoid the temptation of hiding behind complex representations—outline instead what really matters.

As part of systematic implementation of an ever-improving teaching philosophy, I have, over the years, tried to: (i) prepare classes carefully and rationally; (ii) incorporate students' opinions and suggestions into my own performance, through a coordinated and iterative feedback process; (iii) make lectures and discussion classes as simple and intelligible as possible; (iv) highlight main points in the classroom; (v) provide individual homework problems to stress details; (vi) emphasize relationships of the subject to other fields of practical interest; (vii) be available for individual students or small groups for clarification of important or difficult-to-understand points; (viii) foster critical thinking skills, so students learn to develop reasoning methods rather

than problem-solving routines; and last (but certainly not least), (ix) be fair in the evaluation, by providing comprehensive exams with a balance of conceptual and analytical questions.

I have been fortunate enough to succeed as a role model for other faculty members, and have had the privilege of being accordingly recognized by my peers—such as with the *Cruess Award*, as well as by students who have been exposed to my style and learned how to solve problems side-by-side with social ethics in their jobs after university. In particular, the positive feedback received via students' evaluations has provided me with an incentive to go on teaching, constantly strengthening my commitment as an instructor and my teaching skills. I hope that my efforts will have a positive impact on upcoming generations and will help alumni to be technologically competent and socially aware. After all, and as Allen Foegeding (2010) once said, "*What better a profession than being paid for doing what I love to do*"!

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