

Teaching Philosophy

Fokoué, Ernest

The quintessence of my teaching philosophy is to inspire, to mentor, to coach, to lead and to support all my students in the transformative journey of discovery and exploration of the power and beauty of statistical, mathematical and computational methods.

My teaching experience at the university level formally started in October 1995 when I joined the Catholic University of Central Africa (Yaoundé, Cameroon) in my capacity as Assistant Lecturer of Computing Science. However, prior to that formal appointment, I had since my early secondary school years undertaken various informal teaching duties ranging from entertaining my friends on my mathematical and scientific fascinations to teaching various people in private tuition on a wide variety of topics. From my graduate school years up until now, I have taught Elementary Statistics, Business Statistics, Statistics for Psychology and Behavioral Sciences, Statistical Data Analysis, Probability and Statistics for Engineers and Scientists and Computational Statistics, Nonparametric Statistical Methods, Fundamentals of Statistical Theory, Time Series Analysis and Forecasting, Statistical Regression Analysis, Principles of Statistical Machine Learning, and Statistical Data Mining.

My teaching philosophy rests on a fundamental belief of mine that I hold dear, namely: *Except for a tiny minority that achieve academic excellence without the guidance of competent and genuinely dedicated instructors, the large majority of those who later become intellectual leaders owe their success in great part to educators moved by the passion and compassion to share their knowledge. However, successful knowledge exchange only truly takes place when the dedicated instructor comes across a student ready and willing to invest time and effort into the task of acquiring knowledge. The relationship between the instructor and the student therefore takes the form of a tacit contract that crucially requires the shared responsibility of the two parties involved, if it has to be successful.*

If the student is truly committed to learning and the instructor is supportive and available to guide her/him through the discovery process, the outcome is guaranteed to be transformative learning.

I believe that the goal of any respectable institution of higher education should be to train highly competent future leaders equipped with problem solving skills that allow them to function interdependently and effectively in their chosen field. As a college professor, I quintessentially always strive to contribute to this noble goal by encouraging my students to think creatively, deeply, and independently. However, I also emphasize the crucial importance of synergetic collaborative team work that contributes to healthy and mutually beneficial interdependence. I do my best to encourage a proactive approach to learning, by challenging my students to always first attempt the problems from many angles before seeking help when the need arises. In my experience, those of my students who apply this approach end up having a very rewarding and memorable encounter with statistics, as they genuinely acquire knowledge through personal exploration rather than mindless ingurgitation-regurgitation.

I deliberately chose my profession because I love it. I delight in standing in front of a group of learners to talk about statistics. That alone, I believe, is my way of telling my students that statistics is an interesting subject worth investing their intellectual effort in.

I made up the acronym **DECODER** as a device that guides and informs my approach to teaching and learning. **DECODER** applies to both myself and my students.

- D** stands for **dedication, determination, discipline, desire to learn, discovery**. In practice, this translates into willingness and commitment to acquire new knowledge, to learn and to grow. This is clearly the rock solid foundation without which the teaching/learning experience can quickly become a nightmare for the two parties involved.
- E** stands for **effort and encouragement**, and the **expansion** that naturally results from them. Without **effort** nothing worthwhile can ever be achieved. Besides, **expansion** resulting from **effort** leads to **enjoyment**, and ultimately to **fulfillment**.
- C** stands for **challenge**, but also for **critical thinking** and **critical self-reflection**. Without challenge there is no growth, no expansion and therefore no fulfillment. Challenging myself and my students constitutes one of the most important axes of my teaching/learning philosophy. Challenges sharpen the student's **creativity** and critical thinking which I see as essential to respectable and effective university education.
- O** stands for **originality, openness, or observation**. I make it a matter of utmost importance to remind myself and my students to make an effort to see things in a new way, to be open to new knowledge and new aspects of things they already know. This means daring to venture outside the comfort zone, and be willing to embark on uncharted territories of knowledge. I often ask my students to rephrase definitions and concepts in their own words, emphasizing their understanding of it, rather than paraphrasing their notes.
- D** stands primarily for **depth**. *With depth comes clarity, and with clarity comes understanding*. This is an invitation to investigate beyond the surface of things, and so as to hopefully reach their quintessential nature. Here, **D** also stands for **dialogue, debate, decision**. Finally, **D** is also **delight**, as I believe that the expression of talents and abilities should ultimately be a delightful and fulfilling experience.
- E** stands for **excellence**. I do my best to inspire my students to offer their very best. By creating a conducive learning atmosphere and by challenging my students, I hope to encourage the expression of the very best of their unique talents and abilities. Here, **E** also stands for **ethics** as I encourage my students to strive to be people of honor and noble character.
- R** stands for **responsibility, respect, righteousness** and **rigor**. This is particularly useful when lack of motivation, difficulties, and other problems set in. I often remind my students **not to waste their talents, their time and/or their money, but instead to make the most of these**. This last letter of the acronym is crucial to the whole edifice, because despite all the good intentions, problems inevitably arise, and solving them requires the crucial acceptance of shared responsibilities, a commitment to rigorously establish what is **right**, all in a spirit of mutual respect for all the parties involved. Throughout the academic semester/quarter, I emphasize the vital role of shared responsibility in scholarly success, because I see it as foundational in the training of future responsible and competent graduates.

The student is not above the teacher, but everyone who is fully trained will be like their teacher.

Luke 6:40

Teaching offers me a unique opportunity, and indeed privilege, to share my passion for mathematical sciences in particular and knowledge in general. I particularly enjoy teaching various aspects of mathematical statistics, computational statistics and machine learning from both the theoretical and empirical perspectives. I have also recently begun to appreciate the appeal of teaching applied statistics and service courses, especially when the preparation for such courses takes me on a tour of various applications of statistics in real life. I greatly enjoy teaching, and I believe that my enthusiasm serves as a catalyst that inspires my students. I herein give details of aspects of teaching that I have reflected on.

Prior Preparation Promotes Peak Performance. Over the years, I have noticed that my enthusiasm and my self-confidence in the classroom are greatly enhanced by my commitment to careful preparation of my lectures ahead of the teaching session. I always make it a point to prepare lecture notes of good quality that students can download from my website at least 12 to 24 hours before the class. This frees my students from the distraction of taking lengthy notes so that they can concentrate on my explanations and only take notes to reinforce and deepen their understanding. This also allows me to use the classroom to concentrate on additional examples that make understanding easier. I also explicitly encourage my students to practice prior preparation.

Contribution to the development of team spirit. Although I often stress the crucial role of independent thinking, I also encourage team spirit in my students. Homework assignments and laboratory work provide a great opportunity to encourage the development of team work. I always encourage my students to team up with a classmate of their choice so that they can reflect together on problems, provided each person ends up writing up his report or homework independently (in his/her own words and style). In my efforts to encourage team spirit, I have noticed that overall many of my students deepen their understanding as a result of discussing with a team mate as evidenced by the clarity of the work they turn in. Having buddies seems to ease the learning process. As a matter of fact, during my office hours talking to a small group of students who study together seems to get better results (in terms of understanding, test scores, classroom participation) than the one-to-one traditional style. I am well aware that some students may end becoming lazy as a result of having brighter teammates. To prevent this, I require and enforce independent write-ups.

On being a role model. As a teacher, I am aware of the fact that a good number of students will, knowingly or unknowingly, end up ideating me as a role model, at least in connection with the subject matter of statistical science, although indirectly with respect to many other aspects of life as well. I therefore believe that I have to continuously learn so as to update and improve my knowledge, and indeed exude and project an outlook on/of life worthy of being imitated/emulated. My scholarly research and my readings are vital to my teaching as they allow me to confidently and masterfully transmit up-to-date, accurate, refined and high quality knowledge. Such an ongoing learning endeavor on my part is the expression of my love for the subject that I teach, a love that allows me to always display the high degree of enthusiasm and provide the well designed learning materials (lecture notes and exercises) that motivate and inspire my students to join me in the exciting and rewarding exploration of knowledge. As a role model, I seek to encourage a commitment to excellence in my learners through my dedication, my rigor, my sincerity, my honesty, my truthfulness and my sense of responsibility. This is actually doubly beneficial as I myself am committed to continually developing into a man a honorable character.

Learning is rediscovering what we already know. *Plato*

On being a coach and/or a teammate. As a teacher, I am very often just a guide or a coach whose duty is to assist learners in their exploration of the many facets of knowledge. This is particularly true when I am called upon to teach advanced undergraduate or graduate students. It is my view that people approach reality and knowledge in various different ways, and that each learner should be allowed and encouraged to explore reality and knowledge in his/her own way, challenging existing certainties along the way if necessary, and confidently proposing new ways. I do my best to encourage students to articulate and express their way of understanding a particular concept. I believe that effective learning is a shared responsibility of the instructor and the student, and I believe that commitment to excellence on both parts and mutual respect serve as catalyst in this process.

As a teacher, I see myself as a collaborator or team mate for my learners. By using open ended questions for which there exist no solutions/answers, I intend to show my learners that we are collaborators and team mates all working together towards understanding the world that we live in. This allows students to perceive their teacher as a human being just like them, and therefore encourages them to approach him/her and interact with him/her without fear, thereby creating a supportive and conducive environment where they can confidently awaken and express their learning and creative abilities.

Real life projects for which a thorough gathering of facts and data is required is also a good way to mingle with students, work with them as collaborators and team mates and thereby render the teaching/learning experience more enjoyable and indeed rewarding. This should also encourage students to develop their creativity, their openmindedness and their effective problem solving skills.

On students' participation. In my teaching practice, I strongly encourage students participation through the **pencil exercise** method and pre-class activities and exercises. *A pencil exercise is a simple but relevant question that I ask during the lecture and for which I require all the students to write an answer with their pencil on their notepad. After a couple of minutes, I go around the class to check the answers, and I insist on having everybody try it.* During all my lectures, there are at least five pencil exercises, as I have come to notice that this ensures that all students participate. The pencil exercise method offers the advantage that students cannot use shyness or fear of ridicule as an excuse for not participating. It is obvious that students participation does help with their understanding, with the added benefit of increased self-confidence over time. Over the years, more and more students tend to volunteer their answers right after the **pencil exercise**, something that was rare before. I have recently adopted the practice of posting pre-class exercises on my website, and I encourage students to attempt them so as to speed up their understanding during the lecture. The place of pre-class activities in teaching statistical concepts cannot be overstated. When I teach statistical concepts at the undergraduate level, I always encourage and challenge my students to read the material ahead of time, to search the web for studies and experiments, to bring their own data, their own experiments or personal polls (university rosters, phone books, other sources). In short, I let them somehow come up with scenarios relevant to the chapter under study. I have been lucky to have a good number of students participate this way, and the results are always very rewarding to the whole class.

When you truly learn, you grow and expand, and as a result you feel happier and more fulfilled.

EPF

On student-centered learning. The pre-class activities described earlier allow the teaching practice to somehow revolve around the students. I believe that an effective teaching approach should be geared towards creating a conducive learning environment where both student-centered learning and the classical didactic instructor-directed teaching can be appropriately combined to facilitate students' exploration of knowledge and therefore ease the learning experience. When students are encouraged to explore knowledge and reality in their own way, they find it easy and enjoyable to unfold their inborn potential, and the result is an increased curiosity and willingness to learn, plus a good sense of critical reflection and analysis. While this can be difficult to implement for large classes, it is a rewarding experience when class sizes allow it and when students are the least bit conscientious.

One of the merits of students' participation and student-centered learning is that it allows them (and me) to get an immediate feedback, and therefore to shape the following parts of the lecture accordingly. In other words, I consider teacher-student interaction to be a vital component of an effective learning/teaching practice. In fact, such an interaction contributes greatly to the dynamics of the teaching experience since it allows me to learn from students and therefore to improve my teaching practice.

Teaching Statistics as a service course. From a delivery standpoint, my experience suggests that teaching service courses (non-major) is by far more difficult than teaching major courses and graduate courses. There is no need for preaching when the students at hand deliberately chose to enroll because they love the subject matter. In service courses, I spend more time on examples, and I try to concentrate more on what's "fun" and appealing about the concept and how it relates to their personal background and knowledge.

The biggest challenge in teaching statistics has always been the resistance of some non-statistics major to the very word statistics. Though I have been successful at times in getting some such students to follow, I must admit that it can become very daunting and frustrating. There have been a number of cases where I strongly considered encouraging some students to drop the course altogether. I believe no amount of effort on the part of even the most dedicated instructor can change a student who has issues beyond the subject matter.

On bridging the communication barrier: I always do my best to know my students as much as possible. At the very beginning of the quarter, I get each student to fill an information sheet with such vital information as the Math courses they took before, their comfort in class participation, their non-academic working hours during the week, their personal information, and so on. When the size of the class allows it, I always end up knowing all my students by name, and I always invite a student to talk to him/her in a one-to-one context if I notice an unusual pattern of behavior or progress. This could be a very brilliant student that I need to encourage personally, or a weak student with whom I need to address some weaknesses.

Whenever possible I always welcome the opportunity of a good chat with students, on topics ranging from sports, to society, to other disciplines, to politics, to spirituality, etc ... I have noticed that the smartest students in the class are the ones that tend to strike such conversations, and I tend to enjoy them. I have also had some struggling students stop by with a good attitude and a willingness to exchange a few words beyond statistics. At any rate, I find it very refreshing.

The search for the best is not always guarantee to fulfill you, but the search for your best always does.

On the good grades versus learning debate: Students are always overly concerned and worried about grades, and understandably so. These worries and concerns can even become an impediment to the smooth running of the class, especially when a good number are not having "good" grades. During my lectures, I always encourage my students to focus on understanding, by telling them that with good understanding grades naturally follow. My syllabus repeatedly insists on **understanding** as opposed to cramming for tests, and it has been my experience that students who follow this advice generally do well.

Relevance of course to real life. Real data and undergraduate research experience. Hands-on sampling practice can be a very rewarding experience for both the instructor and the students. From the college roster as sampling frame to the local telephone book, it helps understanding a great deal to engage students in sampling activities as a way to connect the concepts taught in class to day to day activities. Election years in this regard are a bonus when it comes to explaining such important concepts as margin of error.

On Computers and the Internet revolution. As a practitioner and researcher in computational statistics, I have always been sold to the idea of making the most of computers as a tool for easing and speeding up students' understanding of statistics. I have used a variety of statistical computing and mathematical computing software packages in my teaching of statistics, and it is clear that they help tremendously. However, I have always insisted on the precedence of deep understanding over computer manipulations. Students who understand the concepts well prior to manipulating them on the computer tend to do better than those who do it the other way around.

Teaching in the web age does provide many advantages. The Internet is filled with excellent Java Applets that provide good instruments for teaching and learning statistics and mathematics. From basics concepts of sampling to sampling distributions and intermediate probability, one can indeed make very good use of the Internet as a tool to put some life into the teaching of Statistics and Mathematics. I have personally used the Internet quite frequently in my classes.

On mentoring and advising. University students are supposed to be grown-ups, and should be treated as such. Unfortunately, it is not uncommon to come across many a student who need to be reminded of their fundamental responsibility: **study, explore their potential and grow**. My years of experience have allowed me to be aware of such a situation, and wherever possible, I do my best to strike the balance between "babying" struggling students and challenging them to grow up and take their responsibilities. Whenever possible, I mainly use office hours time to share ideas on discipline, achievement, responsibility and others with students who seem to display what I perceive as immaturity. A good number are receptive to this and make some progress as a result, but many usually have problems beyond my occasional amateur-counseling.

What others think of you may matter some, but ultimately it is what you think of it that truly matters most.

How about oral tests? I recently experimented with optional oral tests and presentations for grade improvement at both undergraduate and graduate levels, and I noticed that having debate their understanding orally seems to motivate students to acquire more depth in their knowledge. I tried this as a challenge to a group of students who did not do their homework and those whose skipped vital tests. To my biggest and pleasant surprise, all those who dared to take up the challenge displayed a far deeper and clearer understanding than I credited them with. In fact, most of them went on to produce a significantly improved performance in the final exam. This is very encouraging, and I intend to seriously explore this further whenever possible.

You cannot teach what you have not learned, and what you teach you strengthen in yourself because you are sharing it. Every lesson you teach you are learning.

A Course in Miracles

Beyond statistics: I am aware of the fact that statistics as a discipline is just one of the ways in which human beings approach their thirst for a better understanding of the universe. Bearing that in mind, I often use little fractions of my classroom time to venture into other disciplines where I possess some rudiments of knowledge. I often touch on aspects of philosophy, history, linguistics, theology, just to name a few, and I am delighted to say that such escapades are always well received by almost all my students. It seems to me after a few years, that students appreciate a learning experience that at once aims at many facets of their lives in a gentle way. Besides, at fortunately so, these non-statistical escapades serve as much needed breaks during the class.

Conclusion: It is my view that good teaching requires serious dedication and commitment to excellence at all levels. Teaching is a very profound experience where frustrations are frequently encountered. However, I have realized in my short experience that a regular practice of dedicated critical self-reflection and objective self-assessment make it rewarding and deeply fulfilling both professionally and personally.

At the risk of attempting to put myself in the same league as the great chinese master Confucius, I extended his three layers of learning into what I have come to call the quinto-dimensional hierarchy of learning and mastery. If you only hear, you will forget. If you hear and then see, you will somewhat remember. If you see and then do, as in, at least reproduce, you will understand. If you then go as far as as daring to implement/make/apply, you will comprehend. If finally, you teach/disseminate/pass on/share, you will master. I have shared these insights on the steps to mastery with every single one of my research students, and I have witnessed its power to inspire students to ever greater success and fulfillment. With more than 15 Master of Science theses advised and successfully completed, along with more than a dozen of peer-reviewed scholarly articles/papers co-authored with my graduate students, it is fair the recognize that this philosophy is effectively working and bearing precious fruits.

All in all, the joys of teaching substantially outweigh its frustrations. In my experience, it is fair to say that *teaching does indeed feed my soul, for as I teach I continually go deeper and deeper into the very essence of who I am.* Every extra year of teaching contributes to my growth and expansion as a human being, both intellectually and spiritually, and I will always be ready to welcome all the life-transforming challenges and the joys of this noble profession.

The teacher opens the door, but it is the student's responsibility to enter into the house of knowledge.

Unknown
