Abraham Kwame Badu-Tawiah
Teaching Philosophy

Departments of Chemistry and Biochemistry	Email:	badu-tawiah.1@osu.edu
The Ohio State University	Tel.:	614-292-4276 (office)
100 West 18th Avenue, Columbus OH 43210		765-409-8917 (cell)

My teaching philosophy is based on two related ideas, and that is to teach students not just *what to learn*, but also *how to learn*. In this short essay, I will address the following questions: (1) why I teach, (2) how I teach, (3) how I measure student learning, and (4) how I feed the information from this assessment back into my teaching skills. My journey as a teacher started shortly after graduating from high school when I discovered that the best way to learn is to teach others. This has been my driving force as a teacher in the past, and has motivated me to serve as a teaching assistant, demonstrator, and sometimes as volunteer instructor in every university I have attended. I want to continue teaching because I now believe it is the most effective way to empower people into becoming independent, creative, and to ask the right questions. Teaching and research gives me a unique opportunity to reach out to a large population of people, with diverse backgrounds all over the world.

One of my memorable teaching experiences occurred at Kwame Nkrumah University of Science and Technology, Kumasi – Ghana where I was assigned to teach *quantum chemistry*, an undergraduate senior level physical chemistry course. This course is known to be notoriously difficult to understand, partly because of the lack of foundation, and students' unfamiliarity to quantum mechanics concepts. In my first day in class, I chose to discuss differences between classical and quantum mechanics using Bohr's correspondence principle. I knew that many students are familiar with the concepts of classical mechanics and so can connect relatively easier when compared to quantum mechanics predictions at higher energy levels. The result of this teaching approach was obvious, and resulted in a loud pleasant applause! I have used this teaching approach of tapping into students' background in other courses that I have taught including *organic reaction mechanisms* and *functional group chemistry*. In all cases, I gained students' trust, which subsequently allowed them to approach me with questions. The first lesson from this experience comes in two fold; that as a teacher, I must be familiar with (1) the prerequisites of my class, and/or (2) courses for which my class is a prerequisite. The same teaching experience also taught me that every student has the capacity to learn although the learning curves can vary from student to student, due in part to different backgrounds. To accommodate for such differences I have adopted a systematic approach to teaching which has three activities: (1) problem definition, and why we care about the subject in question (2) possible ways of solving the problem, and (3) the fundamental differences, commonalities, and principles governing each solution. My main motivation for choosing this teaching style is so I can use my classes as models for the student as to how they should learn. In this way, it is natural for the student to organize the materials ("the what to learns") without depending on memorization. It imparts students with a method of knowledge retention and study techniques that are easily transferrable to other courses. From my vast teaching experiences, I have also learned that students can develop creative and interrogative thinking skills by planning, and constantly monitoring and evaluating their own thoughts. In this regard, I use micro-teaching in which smaller student groups are encouraged to participate in assigned problems, to teach each other, share ideas, and validate their answers with those of others. As important as the correct answer is to me, I am also interested in the manner in which students develop ideas. This is particularly important for students who are interested in graduate school where they will be required to write scientific papers using their own experimental research results.

As a volunteer instructor at Purdue University, I had the privilege of spending a lot of time with senior chemistry majors when I assisted in the teaching of *advance instrumental analysis* class, under the supervision of Prof. R. Graham Cooks who was taking over the class from a retiring professor. This was a required analytical chemistry course offered during the last four months (spring semester) of the student time as an undergraduate. The class is highly useful, but apathy was the main stumbling block. I spent time with the students during office hours, four-hour mandatory weekly lab sections, and optional weekend tutorial sections. These valuable periods with the students allowed me to better understand their needs. In many instances the best teaching I did happened in the halls after a class. Upon my recommendations, we introduced one-on-one oral assessments in addition to the usual end of semester (final) exam, and the class is currently taught in the fall semester. In the following year, I led a day's workshop at the start of the semester, where we introduced the students to hands-on, real world applications and importance of chemical instrumentation. This experience exemplifies my main goal as a teacher; which is to ensure that the students learn and succeed in my class. I am willing to change and improve my teaching skills, and to adopt new teaching aids and tools to advance student learning.

My student-centered approach to teaching allows me to insist on high standards in my class. Nothing is more satisfying to me as a teacher than to see the students exceed my expectations. I am mindful, however, that every student develops individually, progressing at different times, and within a wide variety of developmental stages. Thus, my overall expectation as a teacher is that students are able (after leaving my class) to discover and structure meaning from knowledge, and to gain experience by filtering perception, thoughts, and emotions throughout life.