To:             Dr. Erika Paterson

From:        Jackson Kuan

Date:         February 13, 2021

Subject:    Proposal for Assessing the Quality of Education within Organic Chemistry

**Introduction:**

Organic chemistry is one of the most challenging topics that most students majoring in life sciences face in university. Many individuals have voiced their struggles with the subject, stating they find the material to be difficult and unenjoyable. It is well known that this topic is historically unpopular among undergraduate students, therefore the question becomes, how can organic chemistry education be reformed in order to appeal to current and the next generation of students.

If the quality of organic chemistry education is poor, students will not seek out life sciences and chemistry based careers. However, if the quality of organic chemistry education is high, there could be other factors contributing to the negative stigma surrounding organic chemistry. Organic chemistry is a useful discipline for those pursuing careers in biotechnology and life sciences, therefore a strong foundation must be instilled in students, or else they will lack fundamental knowledge on many concepts.

**Statement of Problem:**

Organic chemistry is a required course that many life science students take during their undergraduate careers. As a result, a poor experience in organic chemistry may deter the student from pursuing an education within chemistry and life sciences. The biggest area of concern is the methods that professors are using when teaching organic chemistry. Certain teaching methods are ineffective when learning about complex mechanisms and theories, while other teaching methods are more effective at communicating the material. Additionally, there is a heavy focus on excelling in examinations, with minimal emphasis and reward for learning the material throughout the course. For many students, this teaching model is ineffective and does not provide students the many opportunities to practice and learn from their mistakes.

**Proposed Solution:**

One possible solution is to introduce a standardized method of teaching organic chemistry. By introducing this, every student gets the same quality of education that is effective in communicating the information. The use of standardized slides, information packages, and resources for all students will result in less discrepancy between the teaching styles and inherent teaching biases among professors.

**Scope:**

To assess the state of education within organic chemistry, I intend to investigate:

* What is the most and least effective teaching method for organic chemistry topics?
* How accessible are professors outside of the classroom?
* Are there issues surrounding course organization and structure?
* What is the most effective marking scheme that will not only challenge, but also rewards the student?
* What are students getting out of their organic chemistry courses?

**Methods:**

My primary sources of data will come from an interview with Dr. Jackie Stewart. Her background in educational psychology and experience teaching undergraduate level organic chemistry courses at UBC will provide great perspective on student and instructor interactions. Furthermore, I intend to hold focus groups or surveys with undergraduate students to discuss the quality of education they received from their organic chemistry courses.

My secondary sources of data will include primary literature surrounding the effective teaching models for organic chemistry. Publications regarding educational psychology and focus groups will be taken into consideration as well.

**My Qualifications:**

I am currently a 4th year Chemical Biology student with an extensive background in organic chemistry. I am aware of successful teaching models and ones that are incompatible with organic chemistry.  Currently, I am working with Dr. Jackie Stewart and her FEEL team conducting research on chemistry education. By working and conducting research in this environment with human participants, I am aware of the struggles students are facing in their courses.

**Conclusions:**

In order to improve the quality of education students are receiving, action is required immediately to help students find success in a challenging subject. By addressing the five aforementioned inquiries, the issues surrounding organic chemistry education can be determined and addressed accordingly. Please let me know your thoughts, and if given your approval, I will commence my research immediately.