

*Letters to the Editor
Писма до редакцията*

CONVENTIONAL TEACHING VERSUS POWER POINT PRESENTATION: A COMPARATIVE STUDY FOR UNDERGRADUATE ORGANIC CHEMISTRY STUDENTS

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Lectures in the classroom have been used extensively since the fifth century. Nevertheless, conventional teaching seems to be a more effective method for creative education than other methods. However, many argue that electronic media has much better effects on student education and learning. On this basis, it is important to determine whether power point is the preferred lecturing method over chalk/talk or transparencies using overhead projector methods. Many determined that students like power point better than other methods. However, many believe the subject matter in power point presentation is not beneficial to all students. It is necessary to compare power point and other forms of presentations for the benefits of students.

Chemistry has always been considered as the central subject in science. Considering the trend in USA universities, it appears that organic chemistry has an upper hand in higher studies. The number of organic chemists that work in academia and in chemical and pharmaceutical companies is much more than other chemists in general. However, most undergraduates believe that organic chemistry is a difficult subject. Undergraduates have offered a number of explanations for their weaknesses in organic chemistry courses. One of the most prominent reasons is the teaching method. Experts believe that power point presentations are a better way to deliver the subjects to undergraduates. However, students believe conventional teaching using chalk/blackboard or dry marker/white board is better for their learning experience when organic chemistry is considered as their subject. This paper describes findings from the experience and perspective of the students rather than the experts. It may appear to be contradictory however, it is important to disclose the findings to students and instructors so that better improvements can be made for students' learning abilities.

This study was conducted at the University of Texas-Pan American with undergraduates. Two teaching methods were offered to the students: dry marker/white board and power point presentation. Identical topics were selected for teaching the same group of

students. Appropriate care was taken to use both methods effectively. After instruction and at the end of the examinations, students were asked to write the method they liked best. The results were surprising. More than 90% of students preferred demonstration with dry marker/white board, a method which is similar to chalk/black or greenboard. The opinion of students about the impact of power point in lectures for undergraduate chemistry courses compared to chalk and talk, a non-electronic approach, is reported in this study.

Many research articles have demonstrated ways to improve students' academic qualities (Hill, 2012; Garcia & Banik, 2008; Shallcross & Harrison, 2007; Jones, 2003; Hashemzadeh & Wilson, 2007).^{1,2} Some of these investigations have culminated in numerous powerful articles which expressed concerns on power point presentations (Shallcross & Harrison, 2007; Jones, 2003). Our view point is similar to these authors. Approximately 70% of undergraduate chemistry students out of almost 300 undergraduates admit that their instructors use power point presentations as the only teaching method. It is remarkable to state that most of the students admitted that power point presentations did not help them in improving their grades or learning experience, particularly when organic chemistry is taught. Most students feel that instructors just copy the subject matter from textbooks depending upon their own choices. However, more than 90% of students have expressed concerns on the following subject matters when power point teaching method was used: exchanging ideas amongst other students and instructors, memorization as the key for success on examinations, and simplification of the subject matter. In general, many instructors prepare power point presentations in terms of simplification and therefore do not necessarily go beyond the bullets form. However, power point presentations look great, but create minimum interactions amongst students and their thinking abilities. Most of the students believe that the discussion of subject matter, particularly in organic chemistry is inadequate during power point presentations since all students are engaged in writing notes described in the pre-prepared power point presentations by the instructors.

A few questionnaires on the effectiveness of teaching methods were asked to the students. They were asked specifically to choose from either the power point method or chalk/talk method. About 180 undergraduate organic chemistry students participated either verbally or through discussion. The following are the four questions that were asked to the students: (1) Is power point presentation an effective method for teaching organic chemistry compared to the chalk/talk method? (2) Do power point presentations create more interest in the subject than the chalk/talk method? (3) Do you recommend that power point presentation should be used exclusively for teaching organic chemistry courses? (4) Which teaching method inspires you to actively participate in the classroom with other students and instructors?

The results of this study are fascinating. Most of the students (more than 150) believed conventional teaching with chalk/blackboard or dry marker/whiteboard is more effective than power point teaching in terms of understanding the subject materials, creative thinking, and interacting with others. While one may feel that this study is restricted to one discipline only, this also suggests that students learn much better and follow the course more effectively when conventional methods are used. It is obvious that organic chemistry describes numerous reaction mechanisms which require detailed explanations with examples which may not be possible with the power point process because of content limitations. During conventional teaching, an instructor has ample space and facilities to explain the subject matter with additional examples effectively.

Although limited, this study suggests that modern teaching tools may not be effective particularly to the undergraduate organic chemistry courses because of its limitation of student engagement and relatively less informative subject materials.

Although conventional teaching was discovered more than 500 years ago, it seems that organic chemistry students still prefer this method over modern technology-derived teaching methods. This study requires extension to other subjects to examine whether conventional teaching or power point presentation better enhance the critical thinking and creativity of the students which are the key components of learning. In conclusion, it can be argued that dry marker/whiteboard will not be extinct from our classrooms within the foreseen future.

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NOTES

1. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=977283
2. <http://www.facultyfocus.com/articles/teaching-professor-blog/does-powerpoint-help-or-hinder-learning/>

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