



INNOVATION ABSTRACTS

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STUDENT AWARENESS: BRINGING CHEMISTRY OUT OF THE IVORY TOWER

Each semester faculty members across the country in every field of study begin the term with excitement and anticipation of the prospects of what we know could be a great experience for ourselves as well as our students. We meet our classes for the first time and search the expressions on our students' faces in hopes of reassurance from them that they are as excited as we are about their futures and the adventures that lie ahead.

No matter how much we hope that this is the term when each and every student will be full of excitement and anxious to hit the ground running from day one, we have all experienced those stares that say your class is of no value, a waste of time, they are there only because they have to be, and it's probably your fault that they have to take this lame course. Introductory courses and particularly those courses designed as service courses or general education courses tend to have a higher percent of these students who are slumped down in their chairs with grumpy expressions.

Over the years I have tried to convince these students that they really do need to know something about this subject, regardless of where the future takes them. I am trying to convince them that they need to know something about chemistry. I am trying to convince them that they make decisions with a root in chemistry as a consumer and a voter on a virtually daily basis. For example, will they choose paper or plastic containers; which allergy medicine will they choose; which piece of fruit will they purchase—organic or regular; does the candidate they intend to vote for have a clue what the environmental report being read means?

Learning what their majors are allows specific examples from those fields to be incorporated into examples. If a course or section contains all closely related majors, having someone from that field speak for a few minutes about how the material will help them in the future can be helpful. We all know from experience that what gets the point across to one student

falls on deaf ears for another. Each idea and tact has varying degrees of success, and no one thing will be the silver bullet that solves this problem for all. It takes a combination of efforts to have the desired success.

One tactic that I have used, but that is easily adapted to any field of study, was to assign students the task of finding articles and other references to chemistry in everyday material. For example, students were instructed to use newspapers, magazines, TV shows, movies, instructions encountered with their hobbies, etc. A small percent (about 2%) of the overall grade was attached to the project as incentive to participate. Students turned in evidence of the material along with a one paragraph summary of how the article involved chemistry. Evidence could be a photocopy, a clip, or any other appropriate form for the media involved. Some of the examples were used in class. Printable evidence was posted on a bulletin board just outside a laboratory room commonly used by many of the students.

To determine if any increase in student awareness of chemistry in such consumer materials occurred during the term, students were given a short article to read during one of the first few meetings of class and asked to list as many ways as possible that chemistry information was included in the article. They were specifically instructed not to include ways in which biology or other areas were involved. At the end of the semester, the same groups of students were asked to read the same article and repeat the exercise. Other activities, such as inviting speakers in the students' fields of interest and directing examples (other than those brought to class by the students) to particular majors, were avoided. Classes involved had no chemistry pre-requisite. Courses included one designed for two-year allied health programs, one designed for students intending to continue toward a bachelor's degree in allied health, students in need of a general education laboratory class, and students who needed a chemistry class, but were not science majors; one designed for students who did not have a chemistry course in high school but intended to be science majors.

In one semester, a total of 315 students participated at the beginning, and 209 students completed the activity.



These results represent pooled data from all sections and all instructors. The number of chemistry-related items listed by students was tallied, and a comparison of the results from the beginning to the end of the semester was made.

There was an overall 40.1% increase in recognition of chemistry involvement in the article. This result exceeded the expectation that I had for the project. An unintended outcome, that may be as important as the project itself, involved the bulletin board displaying the examples. During the semester, students not in the participating classes, as well as those in the participating classes, were observed having discussions about an article posted on the bulletin board. Posting this material in a high-traffic area appears to have spurred discussion by students in general.

Not only faculty members, but administrators and students (student evaluation comments, etc.), stressed the need to connect the topics of a class to application and real/authentic situations. This project addressed that concern and should be of interest to any field of study. In classes such as chemistry, students tend to have high levels of anxiety and are somewhat intimidated by the subject. Based on general verbal comments from students during the semester, this exercise appeared to ease some of these feelings for some students and help them realize the ubiquitous involvement of chemistry in our lives.

Regardless of the techniques used during a term or particular class, the results can be rewarding. Sometimes we appreciate and understand the results of such projects, not in numbers or lists, but in comments from our students. One of my favorites was: "You have ruined everything! I can't even cook without thinking about chemistry. I can't read anything or watch a movie or TV in peace anymore." Those days I feel that I have been successful, that I have accomplished something worthwhile. Comments like these keep me coming back year after year and help begin each new class with excitement and anticipation. Maybe, just maybe, next term I can ruin everything for a few more students.

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