General chemistry is a course that serves a vast and diverse student audience. Deciding what students need to know upon finishing the course is difficult because the audience is so varied. For example, how are the needs of pre-medical and pre-health students different from those of agriculture majors? What does the chemical industry think that students ought to know? What is needed for the one-semester vs. two-semester course? How do faculty define a student "need" vs. a faculty "preference" in the curriculum? What are some creative ways of dealing
with diverse needs?

The CONFCHEM Listserv and Website will be used for this session.

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JULY 1999 ON-LINE CONFERENCE

DISTANCE AND COLLABORATIVE EDUCATION USING THE INTERNET

There will be a focused five paper session after the May and June general
session. The session will last from Monday, July 5 through Friday, August
6, 1999 and the tentative list of presenters is:

Doris Kimbrough, CU-Denver - Distance education for non-traditional students
Carl Snyder, Univ. Miami - An Innocent Tries Distance Education
Lindy Harrision, York College - On-line chemistry courses (OLCC)
Deborah Sauder, Hood College and Marcy Hamby Towns, Ball State University -
Physical Chemistry On-Line (PCOL)
Joe Merola, Assoc. Dean for Research and Outreach, Va Tech - "The (cursed)
administrator's viewpoint"

The conference is free to all Internet users. More information will be
posted on the CONFCHEM website: http://www.chem.vt.edu/confchem/

or can be obtained from the session organizer:

Computer-Based Facilitation of Pedagogically Valuable Learning Activities in Large Classrooms

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The presence of large classrooms in our universities is a reality that is not likely to change in the near future. Large classrooms unfortunately deter educators from using the broad variety of pedagogically valuable learning activities that have been reported in the educational literature. Examples of valuable learning activities that are challenging to incorporate into large class formats include collaborative (group) learning, writing assignments, guided-inquiry, interactive class discussions, portfolio-based assessments, and group projects. This article describes several ways in which computers can be utilized to facilitate the incorporation of some of these activities into large classrooms.

Writing Assignments in Large Classrooms: Select-A-Due date

The value of writing has long been recognized as evidenced by the fact that institutions of higher learning have 'writing across the curriculum' requirements. One deterrent to the incorporation of writing assignments in large classes is the time-consuming nature of grading such assignments. I have utilized a web-based form to allow students to register for due dates distributed throughout the semester to facilitate the grading of writing assignments in large enrollment courses. The web-based form collects name, student

identification number, first choice of due date, and second choice of due date. This information is sent to a CGI-script (written in the Perl scripting language) that checks to see if the maximum number of registrants for the first due date choice has been reached. If the maximum enrollment has not been reached, the student is given their first due date choice. Otherwise the script checks their second choice. If their second choice already has maximum enrollment, the student is unfortunately given their least preferred due date. This possibility does provide some incentive for registering early. The web-based form and the CGI-script will be provided via email to anyone interested in them.

Group Projects in Large Classrooms: Online Group Discussion Pages

One common student gripe about group projects is their inability to find common meeting times. The use of computer-based discussion pages can assist students to hold asynchronous meetings and discussions. Several mechanisms exist for implementing online discussions among groups of students. Electronic mail can be used, either through the use of group mailing lists or listservs. A newsgroup-like system would also provide a discussion mechanism, with the added benefit of maintaining an archive of postings. I have utilized the group functionality designed into the *LectureOnline* course development and delivery system developed at Michigan State University by Gerd Kortemeyer (kortemeyer@nscl.msu.edu). This system allows course instructors to design web-based courses or course supplements, to develop semi-individualized homework assignments, and (most important to this topic) to organize students into groups. Each group can access group pages for any group to which they are assigned and post notes to other members of their group. Instructors can access the group pages for all groups. Instructor access to project discussions can assist in the evaluation of contributions by various group members. This provides instructors a good mechanism for dealing with another common student concern, distribution of work in group projects.

The two examples in this article should demonstrate that computer use in instruction need not be limited to educational tools for students. Computers also provide capabilities to facilitate classroom activities and assessment.

A Sunscreen Experiment Using the World Wide Web and Molecular Modeling

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Recently Dick Cornelius and coworkers[1] published an experiment in which students measure the UV spectra of commercial sunscreens and use molecular modeling to predict the electronic spectra of compounds used in sunscreens. We have incorporated Cornelius's experiment into a longer discovery-based laboratory project that introduces students to organic chemistry and spectroscopy, molecular modeling, and search engines available on the World Wide Web. One of the aims of this project is to give students experience with the computational and information-gathering tools that are now available with powerful desktop computers and modern networks. At the same time, we want them to realize that the results of computations or Web searches should not be blindly accepted just because they appear on the computer screen. Some sort of evaluation always is necessary.

The four-week long project begins by introducing the students to organic compounds and functional groups in a short lecture at the beginning of the first laboratory period. After the introduction, groups of three or four students are given infrared spectra of several simple organic compounds and discover the IR peaks that are characteristic of different functional groups. They also measure the visible-UV spectra of six organic compounds and discover the characteristics of the structures of compounds that absorb visible and ultraviolet radiation. In the last part of this experiment they use this information to help them identify compounds. They record the IR spectrum of an unknown and choose the most likely structure for the unknown from a list which we supply. They also match structures of three compounds, one of which is aromatic and one of which is conjugated, with their real-world applications as components of sunscreens, lipstick, and perfume (the latter by default when the other two have been identified).

In the second week of the project, the groups measure the UV spectra of commercial sunscreens with different SPF values, which we use to construct a standard curve so that the SPF of an unknown sunscreen can be estimated[1]. The groups then design a new compound that they expect to be a good sun-