WCCTA Sixth Annual Conference

April 16-18, 1998

Sleeping Lady Conference Center
Leavenworth, WA
<table>
<thead>
<tr>
<th>Time</th>
<th>Program Events for Friday, April 17th</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30-9:00</td>
<td>Breakfast</td>
</tr>
</tbody>
</table>
| 9:00-10:30   | Chapel: Welcome and Opening Presentation By George Kriz  \  
              |  
              |  What Do We Want Students to Learn From the Organic Laboratory  \  
              |  
              |  Panel Discussion: The Role of the Chemistry Lab in the Chemistry Curriculum  \  
              |  
              |  Participants: Mary O’Brien (moderator), JoAnn Deluca, George Kriz, Dick Logan,  
              |  
              |  David Reichgott, Walt Voland, Jack Weyh, and Mary Whitfield                                           |
| 10:30-11:15  | Break  
              | Vendors: Salmon Gallery                                                                                   |
|              | Presentation Location: Flicker  
              |  
              |  The ChemCore Program: Real World Chemistry for Focused Outcomes  \  
              |  
              |  Mary O’Brien                                                                                           |
|              | Presentation Location: Woodpecker  
              |  
              |  Learning Activity Packets for the One-Year Health Science Chemistry  \  
              |  
              |  Rachel Wang                                                                                            |
| 11:15-Noon   | Lunch                                                                                                 |
| 12:00-1:00   |  
              | Real World General Chemistry Projects  
              |  
              |  Mary O’Brien and David Reichgott                                                                      |
| 1:00-1:40    | Using the Learning Cycle in the College Chemistry Laboratory  \  
              |  
              |  Martha Kurtz                                                                                            |
| 1:45-2:30    | Improving Student Thinking Skills in the Organic Chemistry Laboratory  \  
              |  
              |  Randy Engel, George Kriz, & Don Pavia                                                                  |
| 2:30-3:15    | Break  
              | Vendors: Salmon Gallery                                                                                   |
| 3:15-3:55    | Chemical Instrumentation in a Combined Transfer/Technician Program  \  
              |  
              |  David Reichgott                                                                                         |
| 4:00-4:30    | Computer and Laboratories for General Chemistry  \  
              |  
              |  Ralph Morasch                                                                                           |
| 4:30-5:00    | McGraw-Hill Learning Architecture  
              |  
              |  Marilyn Jacoby                                                                                          |
| 5:00-6:30    | Social Hour                                                                                           |
| 6:30-8:00    | Dinner                                                                                                 |
| 8:00-9:00    | An Evening with Madame Curie  
<pre><code>          |  
          |  A Presentation by Carol Berg                                                                             |
</code></pre>
<table>
<thead>
<tr>
<th>Time</th>
<th>Breakfast</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-9:00</td>
<td>Presentation Location:</td>
</tr>
<tr>
<td></td>
<td>Flicker</td>
</tr>
<tr>
<td></td>
<td>Presentation Location:</td>
</tr>
<tr>
<td></td>
<td>Woodpecker</td>
</tr>
<tr>
<td></td>
<td>Presentation Location:</td>
</tr>
<tr>
<td></td>
<td>Dipper</td>
</tr>
<tr>
<td>9:00-9:45</td>
<td>Four Year College Issues:</td>
</tr>
<tr>
<td></td>
<td>An Open Discussion</td>
</tr>
<tr>
<td></td>
<td>Facilitator:</td>
</tr>
<tr>
<td></td>
<td>Dharshi Bopegededera</td>
</tr>
<tr>
<td></td>
<td>Two Year College Issues:</td>
</tr>
<tr>
<td></td>
<td>An Open Discussion</td>
</tr>
<tr>
<td></td>
<td>Facilitator:</td>
</tr>
<tr>
<td></td>
<td>Mary Whitfield</td>
</tr>
<tr>
<td>9:45-10:30</td>
<td>Show and Tell</td>
</tr>
<tr>
<td></td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td></td>
<td>Facilitator:</td>
</tr>
<tr>
<td></td>
<td>Jay Mueller</td>
</tr>
<tr>
<td></td>
<td>Show and Tell</td>
</tr>
<tr>
<td></td>
<td>General Chemistry</td>
</tr>
<tr>
<td></td>
<td>Facilitator:</td>
</tr>
<tr>
<td></td>
<td>Ted Baldwin</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Break: Check out from Rooms</td>
</tr>
<tr>
<td>11:00-12:00</td>
<td>Open Discussion Group:</td>
</tr>
<tr>
<td></td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td></td>
<td>Facilitator:</td>
</tr>
<tr>
<td></td>
<td>Jeff Dial</td>
</tr>
<tr>
<td></td>
<td>Open Discussion Group:</td>
</tr>
<tr>
<td></td>
<td>General Chemistry</td>
</tr>
<tr>
<td></td>
<td>Facilitator:</td>
</tr>
<tr>
<td></td>
<td>Bob Kieburzt</td>
</tr>
<tr>
<td></td>
<td>Open Discussion Group:</td>
</tr>
<tr>
<td></td>
<td>Introductory &amp; Allied</td>
</tr>
<tr>
<td></td>
<td>Health Chemistry</td>
</tr>
<tr>
<td></td>
<td>Facilitator:</td>
</tr>
<tr>
<td></td>
<td>Jo Kohn</td>
</tr>
<tr>
<td>12:00-1:30</td>
<td>Lunch and Business Meeting</td>
</tr>
</tbody>
</table>
Participants - 1998 WCCTA Conference

Ashworth, Kathy
Yakima Valley Community College
P.O. Box 22520
Yakima, WA 98902
ashworth@ctc.edu

Atwood, Peter
Houghton Mifflin Co
1099 NW 167th St
Shoreline, WA 98177

Baldwin, Ted
Olympic College
1600 Chester Ave
Bremerton, WA 98337
tbaldwin@oc.ctc.edu

Berg, Carol
Bellevue Community College
3000 Landerholm Circle SE
Bellevue, WA 98007
cberg@bcc.ctc.edu

Bhat, Clarita
Shoreline Community College
16101 Greenwood Ave N
Seattle, WA 98133
cbhat@scc.ctc.edu

Bopegededera, Dharsi
The Evergreen State College
Olympia, WA 98505
bopegedd@evergreen.edu

Burton, Carol
Bellevue Community College
3000 Landerholm Circle SE
Bellevue, WA 98007

Carrigan, Kathy
Clark College
1800 E McLoughlin Blvd
Vancouver, WA 98663
kcarrigan@clark.edu

DeLuca, JoAnn
Central Washington University
Department of Chemistry #7539
Ellensburg, WA 98926
jdeluca@cwu.edu

Dial, Jeff
Olympic College
1600 Chester Ave
Bremerton, WA 98337
jdial@oc.ctc.edu

DiBari, John
Yakima Valley Community College
P.O. Box 1647
Yakima, WA 98902
jdbari@ctc.edu

Engel, Randy
Edmonds Community College
20000 68th Ave W
Lynnwood, WA 98036
rengel@edcc.ctc.edu

Fromm, Gordon
Buck Scientific
Extech, Ltd
P.O. Box 659
Wilsonville, OR 97070

Giuntoli, Ron
Clark College
1800 E McLoughlin Blvd
Vancouver, WA 98663
rgiuntoli@clarkcollege.edu

Gold, Melodye
Bellevue Community College
3000 Landerholm Circle SE
Bellevue, WA 98007
mgold@bcc.ctc.edu

Goldston, Brett
North Seattle Community College
9600 College Way N
Seattle, WA 98103
brett@seaccd.sccd.ctc.edu

Grant, Karen
Columbia Basin College
2600 N 20th Ave
Pasco, WA 99301
kgrant@ctc.edu
Griffith, Tom  
North Seattle Community College  
9600 College Way N  
Seattle, WA 98103  
griffith@sccd.ctc.edu

Hayden, Seana  
Prentice Hall  
2210 Minor Ave E #7  
Seattle, WA 98102  
seana_hayden@prenhall.com

Hunter, Philip  
Tacoma Community College  
6501 S 19th St  
Tacoma, WA 98466  
phunter@tcc.tacoma.ctc.edu

Jacoby, Marilyn  
WCB/McGraw-Hill  
P.O. Box 471  
Mercer Island, WA  
marilyn_jacoby@mcgraw-hill.com

Kelso, Glenna  
Bellevue Community College  
3000 Landerholm Circle SE  
Bellevue, WA 98007

Kieburz, Bob  
Olympic College  
1600 Chester Ave  
Bremerton, WA 98337  
rkiewulri@olympic.ctc.edu

Kohn, Jo  
Olympic College  
1600 Chester Ave  
Bremerton, WA 98337  
jkohn@oc.ctc.edu

Komisarek, Kim  
Bellevue Community College  
3000 Landerholm Circle SE  
Bellevue, WA 98007  
kim@alumni.caltech.edu

Kreutzer, Karen  
Shoreline Community College  
16101 Greenwood Ave N  
Seattle, WA 98133  
kkreutzer@ctc.edu

Kriz, George  
Western Washington University  
Dept of Chemistry MS 9150  
Bellingham, WA 98225  
kriz@chem.wwu.edu

Kuehnert, Linda  
Edmonds Community College  
20000 68th Ave W  
Lynwood, WA 98036

Kurtz, Martha  
Central Washington University  
400 E 8th Ave  
Ellensburg, WA 98926  
kurtzm@cwu.edu

Lampman, Gary  
Western Washington University  
Bellingham, WA 98225  
lampman@chem.wwu.edu

Logan, Richard  
Wenatchee Valley College  
1300 5th St  
Wenatchee, WA 98801  
rlogan@wvcmail.ctc.edu

Lyle, Cathy  
Bellevue Community College  
3000 Landerholm Circle SE  
Bellevue, WA 98007  
clyle@bcc.ctc.edu

Mann, Caroline  
Edmonds Community College  
20000 68th Ave W  
Lynwood, WA 98036  
cmann@edcc.ctc.edu

Marr, Ken  
Green River Community College  
12401 SE 320th St  
Auburn, WA 98002  
kmmarr@grrc.ctc.edu

Martin, Melissa  
Saunders College Publishers  
15721 N Unicorn Ct  
Mead, WA 99021  
melissa_martin@harbrace.com
Minderhout, Vicky
Seattle University
Chemistry Dept
900 Broadway
Seattle, WA 98122
vicky@seattleu.edu

Morasch, Ralph
Pierce College
9401 Farwest Drive SW
Tacoma, WA 98498
rmorasch@ctc.ctc.edu

Mueller, Jay
Green River Community College
12401 SE 320th St
Auburn, WA 98092
jmueller@grcc.ctc.edu

Obrien, Mary
Edmonds Community College
20000 68th Ave W
Lynnwood, WA 98036
mobrien@edcc.ctc.edu

Oh, Jackie
North Seattle Community College
9600 College Way N
Seattle, WA 98103
joh@sccd.ctc.edu

Pavia, Donald
Western Washington University
Dept of Chemistry MS 9150
Bellingham, WA 98225
pavia@chem.wwu.edu

Rempe, Mara
Seattle University
Chemistry Dept
Seattle, WA 98122
mrempe@skagit.ctc.edu

Reichgott, Dave
Edmonds Community College
20000 68th Ave W
Lynnwood, WA 98036
dreichgott@edcc.ctc.edu

Rodriguez, John
Ace Glass, Inc
341 Conway Drive
johnrod@aol.com

Sandhu, Perminder
Skagit Valley College
2405 E College Way
Mount Vernon, WA 98273
sandhu@skagit.ctc.edu

Schmitt, Robert (Bob)
Tacoma Community College
6501 S 19th St
Tacoma, WA 98466
rschmitt@tcc.tacoma.ctc.edu

Sharpe, Donna
Bellevue Community College
3000 Landerholm Circle SE
Bellevue, WA 98007
c/o clyle@bcc.ctc.edu

Stover, Joan
South Seattle Community College
Academic Center 6000
16th SW
Seattle, WA 98106
jstover@sccd.ctc.edu

Surendranath, Jack
Bellevue Community College
3000 Landerholm Circle SE
Bellevue, WA 98007
jsurendr@bcc.ctc.edu

Terjeson, Robin
Clark College
1800 E McLoughlin Blvd
Vancouver, WA 98663
rterjeson@clark.edu

To, Tonya
Peninsula College
1502 E Lauridson Blvd
Port Angeles, WA
tto@ctc.edu

Volland, Walt
Bellevue Community College
3000 Landerholm Circle SE
Bellevue, WA 98007
wvolland@bcc.ctc.edu

Walls, Francine
Bellevue Community College
3000 Landerholm Circle SE
Bellevue, WA 98007
fwalls@bcc.ctc.edu
Wang, Rachel
Spokane Community College
1810 N Greene St
Spokane, WA 99207
rwang@ctc.edu

Weyh, Jack
Western Washington University
Bellingham, WA 98225

Whitfield, Mary
Green River Community College
12401 SE 320th St
Auburn, WA 98092
mwhitfie@grcc.ctc.edu

Wolf, Gary
Spokane Falls Community College
525 S Alpine Dr
Liberty Lake, WA 98019
2054960@mcmail.com

Wyman, Millard
North Seattle Community College
9600 College Way N
Seattle, WA 98103
mwyman@sccd.ctc.edu
The ChemCore Program: Real-World Chemistry for Focused Outcomes
11:15-12:00, Flicker
Mary O'Brien
Edmonds Community College

Edmonds Community College's new two-year chemical technician program, ChemCore, will be described. This new program emphasizes a concerted educational process toward the goals of fundamental chemical knowledge, skill acquisition in modern chemical laboratory practice, and group interaction experiences typical of current team-oriented industrial laboratories. Several non-traditional components are: a single curriculum that enables either transfer to four-year institutions with an Associate of Arts and Sciences degree, or the completion of an Associate of Technical Arts degree; integration of management, technical writing, and computer classes with the chemistry curriculum; an introductory chemical instrumentation course at the freshman/sophomore level; a required internship experience in a commercial laboratory; and assessment of student work by industry professionals. The curriculum places an emphasis on acquiring and practicing the skills expected by employers, demonstrating these skills as part of the assessment process, and participating in team-oriented problem-solving projects beginning in the second quarter. (NSF's Advanced Technological Education (ATE) program is funding this curriculum and program development project)

Learning Activity Packets for the One-Year Health Science Chemistry Series
11:15-12:00, Woodpecker
M. Rachel Wang, Ph.D.
Spokane Community College

A series of student learning activity packets (LAPS) introducing chemistry and its applications in nutrition and food has been developed. The LAPs incorporate text and interactive laboratory exercises to present chemistry concepts. They are suitable for use in the one-year health science chemistry series as laboratory or supplementary lecture materials. Peer review and class testing have been on-going for the past three years. I will discuss LAP content, class testing results and issues related to implementing new curriculum with non-traditional teaching styles. Free desk copies of the LAP manual will be distributed. Up to ten $250 mini-grants are also available for interested instructors to class test this curriculum. This project is supported by National Science Foundation grant DUE-9452258.
Real-World General Chemistry Projects
1:00-1:40 Flicker
Mary O'Brien and David Reichgott
Edmonds Community College

The laboratory curricula in both the general chemistry and organic chemistry laboratories at Edmonds Community College are undergoing significant revisions to enhance student understanding, to improve student’s thinking skills, and to include skills needed in the workplace. Isolated experiments have been replaced with open-ended, multi-week projects that require students to apply their theoretical knowledge to the solution of real problems and to work collaboratively in the solution of these problems. Examples of some projects are: the analysis and treatment of hexavalent chromium; the analysis of commercial products for calcium using two different analytical methods; the analysis and assessment of campus photo lab waste as a hazardous material; and the on-going monitoring of several area streams for water quality. Several of these projects will be highlighted and new methods of assessment of student work will be described.

Using the Learning Cycle in the College Chemistry Laboratory
1:00-1:40 Woodpecker
Martha J. Kurtz
Central Washington University

I will discuss the learning cycle and give several examples of labs that use this method. This should fit in well with the “theme” of new methods and philosophies in lab courses.

Improving Student Thinking Skills in the Organic Lab
1:45-2:30 Flicker
Randy Engel
Don Pavia, Gary Lampman, George Kriz
Edmonds Community College
Western Washington University

We have developed an organic laboratory curriculum that places greater emphasis on improving student thinking skills than the traditional “cookbook” approach. This curriculum encourages students to think more during all parts of an experiment, but particularly while lab work is being performed. The basic technique experiments developed for this approach place a strong emphasis on both understanding and proficiency. Included in most of these experiments are “Critical Thinking Applications”, which are short exercises in which students must provide experimentally determined solutions to problems related to the techniques. Students then perform increasingly more sophisticated separation and synthesis experiments in which they must solve a problem or generate part of all of a procedure. Students must think critically to write and evaluate their own procedures. Finally, students perform mini-research projects where they develop and test procedures to accomplish a given goal. Not only do students enjoy this approach more, but it is also our observation that they learn more of the skills possessed by experienced organic chemists. Many of the experiments developed for this curriculum will be included in the 3rd edition of Introduction to Organic Laboratory Techniques: A Microscale Approach by Pavia et al.
Getting Students to Think Critically about Science and Public Policy Issues
Critical Thinking and Information Literacy Project
1:45-2:30 Woodpecker
Carol Burton, Melodye Gold, Glenda Kelso, Cathy Lyle, Donna Sharpe, Francine Walls
Bellevue Community College

The "Of Mice and Matter" team together with the Biology Department and the Library Media
Center will discuss their critical thinking and information literacy project. We will discuss our
approach to student-developed and student-led seminars that focused on issues such as medical ethics,
population control, and biodiversity.

Chemical Instrumentation in a Combined Transfer/Technician Program
3:15-3:55 Flicker
David Reichgott
Edmonds Community College

One of the most important skill sets our students need to take into the workforce or into upper
division chemistry, biochemistry, or engineering laboratories is competence in chemical
instrumentation. A course in chemical instrumentation is rarely elected or even available to students
who take one or two years of chemistry for engineering or life sciences. Students who enter the
workforce after two years have experience with instrumental methods that is likely to be below the
expectations of employers. A unique chemical instrumentation sequence has been developed at
Edmonds Community College within a new combined transfer/chemical technician curriculum. Two
courses (2.5 credits each) are offered, one concurrent with the third quarter of general chemistry, and
one concurrent with the second quarter of organic chemistry, that cover the concepts and skills of
instrument design, operation, and methods. Our presentation emphasizes what instruments we’ve
selected, how they are used to teach transferable skills and problem-solving, and how the courses are
integrated with the standard chemistry curriculum.

A Concept Based Chemistry Laboratory on "Exploring Gas Laws"
3:15-3:55 Woodpecker
Dr. Dharshi Bopegedera
The Evergreen State College

I am in the process of developing several "concept based chemistry labs" for introductory and
senior level classes. The goal of these labs is to let students discover chemical concepts by doing
hands-on laboratory experiments. In this presentation, I wish to discuss one of these chemistry labs on
"Exploring Gas Laws".

It is important to note that students need no prior knowledge of the gas laws when they begin
this lab. Students carry out a series of experiments that enable them to discover the relationships
between pressure, volume, temperature, and the number of moles of gases. The laboratory equipment
required is relatively inexpensive. Vernier multi-purpose laboratory instructional software is used for
data acquisition. By graphical analysis of their data (using a spreadsheet software package such as
Microsoft Excel), students "discover" the gas laws. They also use their data to calculate the value of
the universal gas constant (R).

I will discuss each experiment in detail, present a sample of typical students’ data and show
how data analysis led to the discovery of gas laws. I will provide information on the equipment and
software used and briefly discuss other "concept based chemistry labs" to teach different chemical
concepts.
Computers and Laboratories for General Chemistry  
4:00-4:30 Flicker  
Ralph Morasch  
Pierce College

Pierce College has initiated the use of computer technology by incorporating computer laboratory techniques in the general chemistry series using Lab Works. Some of the topics covered are temperature changes in evaporation of a liquid, freezing point depression, concentrations of solutions, turbidity in water samples and acid/base relationships. Using this program also entails using spreadsheets and graphing procedures. The equipment consists of twelve 386 CPU’s and twelve Lab Works interfaces. The department is also interested in assessing the value of discovery type labs versus traditional which could include the use of computers.

What is an Associate of Science Degree?  
4:00-4:30 Woodpecker  
Kathy Ashworth  
Yakima Valley Community College

The Associate of Science Degree at Yakima Valley Community College has helped science students transfer more easily than our previous Associate of Arts and Science Degree. Are there further modifications that should be made? Should it require calculus? Should the humanities and social sciences requirements be reduced?

McGraw-Hill Learning Architecture  
4:30-5:00 Flicker  
Marilyn Jacoby  
McGraw-Hill

On-line and Web-based Learning Centers from McGraw-Hill.

Assessment in and out of the Classroom  
4:30-5:00 Woodpecker  
Vicky Minderhout, Mara Rempe, and Jeff Stephens  
Seattle University

As a result of a workshop on Process Education TM* which we attended, we have incorporated a variety of assessment tools (assessment of group activity, of assignments, of exams, and individual self assessment) into our courses. (The courses include general chemistry, fundamentals of organic, and biochemistry.) The goals of these assessment tools were to gather data generated by students that could be used to improve classroom activities, to help students improve their learning skills, and to shift more ownership of learning to the students. We will discuss assessment and the tools we used and report the results of a common survey on assessment administered at the end of these courses.

*Dan Apple, Ph.D. and Pacific Crest Educational Consultants
CHECK-IN TIME IS 3:00 PM

CHECK-OUT TIME IS 11:00 AM
In deference to incoming guests, we appreciate your cooperation in observing this time. If a late check-out is needed, please get approval in advance of your conference.

REGISTRATION
The registration desk in Sleeping Lady Lodge is staffed from 8 am - 10:00 pm daily. Gift shop purchases may be made during these times. Please notify us of arrivals expected later than 10:00 pm.

PHONES
Telephone information is provided in guest rooms next to the telephone. Pay phones are located in Sleeping Lady Lodge, in the Salmon Gallery, and at the dining hall entrance.

PETS
Sorry, no pets.

WALKWAYS
Decking planks are spaced to drain water for more secure footing and will trap high-heeled shoes. Non-slip footgear is essential.

VEHICLES
Please park your car in the parking lot. Bikes are welcome, but no motor vehicles may be driven site.

SAUNA
The Sauna House is open 24 hrs a day and is located at the west end of the site.

MASSAGE
If you'd like to schedule a massage, please phone our front desk for the name and phone number of our massage therapist.

DINING
Meals are served buffet style. The fare is nutritious and delicious with seasonal home-grown garden produce, homemade breads and pastries, and a choice of entree.
Meal times are:

<table>
<thead>
<tr>
<th>Meal</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>7:30 am M-F</td>
</tr>
<tr>
<td></td>
<td>8:00 am Weekends</td>
</tr>
<tr>
<td>Lunch</td>
<td>12:00 pm</td>
</tr>
<tr>
<td>Dinner</td>
<td>6:30 pm</td>
</tr>
</tbody>
</table>

Trays are located at the beginning of the buffet table as you enter the dining hall. Help yourself to fresh selections of international salads. An attendant will assist you with hot food items. Beverages are available at the small buffet.

When you are finished, please place your dishes back on the tray and slide the tray on to the carts located at each exit.

Sleeping Lady is a no smoking facility, indoors and out. Our staff priority is to keep rooms fresh for all guests and grounds fire safe and litter free. Guests who smoke in cabins will be charged an extra $50 cleaning fee on their bill or through their group leader.

I:Conferencing.living...01/24/97