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About The Newsletter

Strategies for Success is published as a service to undergraduate science instructors. It is intended to stimulate ideas, disseminate solutions to common obstacles, and update readers on recent developments and findings. We welcome comments, contributed articles, and suggestions for future issues. Please contact the Editor at strategies@aw.com or via fax at (978) 465-6658. Past issues of the newsletter are available on our Web site at www.aw.com/bc in the *Strategies Workshop* section.

MOTIVATING FUTURE SCIENTISTS

A carefully constructed course of study seeks to challenge all students and support them in their quest to succeed. The role of teacher as leader and mentor, however, often transcends the bounds of the graded course of study, as faculty members work to inspire students to more fully realize their role in the community of scholars, the profession of science, and society at large.

In this issue, our contributors present several ways in which they encourage students to go beyond their classroom success—to develop their interest in research, their presentation and teaching skills, and their role as knowledgeable representatives of scientific professions. Your voices, too, contribute to the range of ideas submitted in response to our Sound Off question, “How do you keep your best students motivated?”

Thank you to our contributors and correspondents for making this another strategy-filled issue—and for keeping us motivated to share the wealth with all of you!

GOOD STUDENTS BECOME GREAT STUDENT LEADERS

*Tom Berke, Brookdale Community College
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For decades I have heard that discovery learning is a more effective way of teaching than lecturing alone. At Brookdale, our vision for discovery learning is to link chemistry concepts to real-world applications of interest to students. As a first step toward this vision, we've adopted Peer-Led Team Learning (PLTL) in general chemistry: a method that not only engages our current students in their learning, but also involves our better students as peer leaders.

What is PLTL?

PLTL emphasizes student achievement through active learning in a peer-led workshop. In a PLTL course, students work in small groups to solve a set of carefully developed problems. The goal is to introduce students to chemical concepts starting with very concrete, hands-on problems and progressing to much more abstract ones. Problem sets have been developed for all topics in general and organic chemistry.

When I was introduced to Peer-Led Team-Learning (PLTL) I immediately became excited by it. I saw it as a way to demonstrate the power of discovery learning to my department without teachers having to give up lecturing. Working in teams gives students a feel for the skills they will need in their careers to solve customer problems. The benefits also apply to our peer leaders, who have done well in both general and organic chemistry courses.

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Good Students Become Great Student Leaders

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How PLTL Works

In a typical peer-led workshop, students meet with a peer leader for one to two hours per week and work as a team to solve carefully structured problems designed to foster both critical thinking skills and problem-solving abilities. The workshop problems and activities (taken from problem set books and the *PLTL Guidebook*) are geared to student ability levels, utilize key course concepts, and channel student efforts into effective collaboration. Our PLTL workshops are run weekly, during the last hour of class. Because we don't have recitation sessions, we give up an hour of lecture each week for the workshop. We break the class into groups of 6-8 students; each group has its own leader and works in a separate room. (In a bind, two groups could function in the same room.)

Each small group of students is led by a peer leader, a student of about the same age as the students in the class. Leaders present their groups with a series of carefully constructed questions that are solved as a team. Problem sets have been developed for every topic in a two-semester general chemistry course and progress from concrete to abstract. Leaders lead by asking questions, not by tutoring or by providing answers. They promote discussion and deflect questions directed at them back to the group.

Choosing and Training Student Leaders

We found our peer leaders by talking with our "good" current and former students in the school year before we were to begin the PLTL project. Enthusiasm, self-confidence, and an ability to work with people are probably as important as a good understanding of the material when selecting leaders.

Leader training was done in three half-day sessions. We followed the suggestions in the *PLTL Guidebook* to determine what to do in each session.

The first training session for the leaders was held in the spring. It served to welcome them and provide a very general introduction to PLTL.

One week before the course was to begin, we trained student leaders to run workshops by taking them through what they would be doing in their first PLTL workshop. They started with an ice breaker, then got to be a group of PLTL students solving a problem that is also part of the PLTL instructor training workshop. Finally each leader led the group in solving problems from the first problem set in the PLTL General Chemistry book, which they would later use with their

groups. It was a perfect preparation. Leaders walked out feeling confident and knowing what to do.

After the first weekly workshop, the leaders had their third training session to answer any questions and handle any concerns. The discussion was very lively!

Since the training, we have met with our leaders weekly both to select problems for workshops and to have leaders do them so that they are confident when they enter the classroom.

Leaders also write a journal entry after each workshop, which is one of the main ways they communicate with each other and with instructors. Journals include:

- the problems completed in the workshop.
- attendance (which counts as 5% of the final grade).
- any problems that arose.
- conclusions and suggestions.

Leaders e-mail their journals to all leaders and instructors in the course, which gives us a chance to deal with questions and problems as they arise. (Leaders are embarrassed to do this at first but once they do it they see how powerful it is. They recognize this as soon as the third training session. From then on they are anxious to do it.) Many of the questions are dealt with via e-mail chats. Others are handled in the weekly meetings with instructors. Leaders contribute as much to problem solving as instructors, which is a wonderful experience for them as well as for us.

Reflections

Ideally, students should work on problem-solving in their groups without the leaders having to intervene, because a primary goal of the approach is to foster self-reliance, the ability to communicate, and an understanding of the material that goes deeper than figuring out how the instructor arrived at a particular answer. We are beginning to feel this happening as our students gain confidence and independence.

Because this is as new for us as it is for them, we emphasize to our students and student leaders that we are all in it together. Their suggestions are as good as—and frequently better than—ours, and we are well on our way to realizing our vision for discovery learning! ■

Editor's Note: PLTL originated at The City College of The City University of New York as a pilot project funded by the National Science Foundation (NSF) and later as part of NSF's Chemistry Systemic Change Initiative. PLTL is currently being disseminated nationally at the college level with support from NSF. To learn more, visit their Web site at <http://www.pltl.org>, where you can find other PLTL users, a schedule of PLTL workshops, conferences, and presentations, and links to the PLTL Guidebook and associated problem sets geared to different courses.



EXPANDING YOUR HORIZONS: A SERVICE AND LEADERSHIP OPPORTUNITY FOR COLLEGE STUDENTS

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Skyline science students are involved in an exciting project that builds on their academic strengths while promoting leadership and service. We know that our students are learning facts and honing their intellectual skills in the classroom and laboratory. However, we cannot expect their leadership skills to miraculously appear while they're doing lab experiments. If they are going to be leaders in their professions, we need to provide the opportunity for students to develop the skills and attitudes that are essential for leadership.

Additionally, we want to connect students with society to foster their personal commitment to service. The possibility of effecting social change often seems remote to a young person. (Perhaps this is one of the reasons so few 18 to 24 year-olds voted in the November election.) Being actively involved in meeting a community need can empower students and generate a commitment to service. To these ends, we encourage Skyline students to help plan and implement Expanding Your Horizons.

Expanding Your Horizons Conference

Expanding Your Horizons (EYH) is a math-science conference for girls in San Mateo County, California, that seeks to encourage the success of women in science- and math-related fields and to promote education as a means of achieving a desirable lifestyle. Math and science were chosen as the conference focus to counter gender-stereotyping in traditionally male-dominated career areas. The conference targets girls because they often feel that science will not help them earn a living and that the rigors of a career in science are not compatible with motherhood. One of the conference goals is to provide role models and encouragement in these areas for the young women.

Skyline College has hosted EYH every March since 1980. Over the years, participation has tripled; 1,200 girls attended EYH in 2002. During the conference each girl participates in three hands-on workshops led by women working in math, science, and engineering. The intent is that the girls will meet women who use science and math in their careers as well as women in non-traditional careers. During the workshops, the girls do activities that represent some of the things the presenter does on the job as they learn about career opportunities and the training needed to qualify for them.

Skyline hosts the conference as part of its educational mission. The planning committee and presenters volunteer because of their personal commitment to providing this opportunity for young women. Skyline students volunteer to add the experience to their résumés, to contribute to the community, and because it's fun.

Student Involvement

Skyline students participate in EYH in three important ways. First, any interested student may participate as a "go-fer." Between 50 and 75 Skyline student go-fers volunteer to help each year. Go-fer may not be a lofty title but the fact is that the students run the actual event. Before the conference, go-fers help with mailing programs and stuffing conference packets. On the day of the conference, students help distribute registration materials, snacks, and lunch; guide girls to their workshops; and get last-minute lab supplies.

Second, a few science majors are invited to serve on the planning committee. The planning committee contacts potential speakers and coordinates rooms and supplies for the presenters.

Student presenters are the third group of students who help with the conference. One of the goals of EYH is to provide an opportunity for girls to meet and form a personal relationship with a role model, so we keep enrollment to 20 in each workshop to allow for individual attention to each girl. The participants are very young—over 80% are in grades 6 through 8—and the concepts of CEO, senior scientist, and project manager are abstract to many of them. Early on, we found that most middle-school students don't know what graduate school is and many of the girls are overwhelmed and even dismayed to find out their career choice requires nine years of education after high school. We feared that instead of providing support and encouragement, we could be confusing them.

In order to bridge the age gap between these young participants and presenters who have completed graduate school and have been in the workforce for a few years, we began several years ago to invite science majors to present workshops and develop their leadership skills outside of the classroom. Skyline students present in teams of two or three and develop their presentation and workshop activities with Skyline faculty. While they are presenting topics such as "Chemistry Magic," "Bones," and "What's in Your Drinking Water," their personal message to the participants focuses on doing your best in high school and taking as



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Expanding Your Horizons

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much math as possible. Going to college is presented as the first career step the girls need.

Student Success

Student involvement in the conference has been a wonderful success. All of the Skyline students who participate—go’fers, planners, and presenters—enjoy the day and know they are helping the next generation. On the post-conference evaluation, the student-presented workshops always receive high ratings and, in 2002, a student-led workshop achieved the highest rating of all. The participants said what they liked most was “doing the experiments,” “seeing little insects in a pond,” and “the ‘teachers’ were nice.” An unanticipated benefit is that our students enjoy working alongside their professors. Their participation as a peer is quite tangible to the students.

Skyline students are proud of EYH and have adopted it as their own. Each September, students start talking about what they want to do for EYH—and how we can improve it! ■

Editor’s Note: Christine L. Case is co-author of *Microbiology: An Introduction*, 8th ed., by Tortora, Funke, and Case (Benjamin Cummings, 2004) and *Laboratory Experiments in Microbiology*, 7th ed., by Johnson and Case (Benjamin Cummings, 2004). To learn more about the EYH conference, visit <http://smccd.net/accounts/eyh/eyh.html>.

HONOR SOCIETIES FOR BUDDING SCIENTISTS

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I had been a full-time college instructor for only a couple of years when one of my students asked me a question that is still having a big impact on my life today. That student was the current president of our college’s chapter of Phi Theta Kappa, the International Honor Society for the Two-Year College. The full-time advisor for their chapter had announced his intention to step down and their part-time advisor had taken another job and was leaving the area. The student officers asked if I would be interested in taking the full-time advisor’s position.

I knew a little about the organization, having been a member while completing an A.S. degree at the community college near my home. After learning about the types and numbers of activities our college’s chapter participated in each year, I told them I was certainly

interested but that I wouldn’t be able to serve as their full-time advisor. In considering my teaching load for the upcoming academic year, I knew I wouldn’t be able to juggle it all. I did, however, volunteer to become their part-time advisor. Over the next two years I served in that capacity, and about five years ago I moved into the full-time advisor’s position. Since that time I have been constantly impressed by the international organization and the opportunities afforded to its student members. Honor society membership is a great way to give our students opportunities to broaden their horizons beyond the scope of the classroom setting.

Phi Theta Kappa began in 1918 at Stephens College in Columbia, Missouri. At that time there were no honor societies for two year college students, and the original intent was to emulate Phi Beta Kappa (an honor society for four-year college and university students). Little did the founders know what would come from such humble beginnings! Today Phi Theta Kappa has over 1,200 chapters in the United States, Canada, Germany, and Japan, and is the world’s largest honor society. Students are invited to join based on their grade point average and, after joining, are afforded many opportunities to participate in the society’s hallmarks of Scholarship, Leadership, Service, and Fellowship through independent and guided study.

Honors Study Topics

Each year Phi Theta Kappa International provides an Honors Study topic as a guide for chapters to follow in planning activities for its student members. Topics vary widely, and are intended to be used as a way to cross curriculum boundaries. Some topics from the last few years that have incorporated science-oriented discussion and study include “The New Millennium: Past as Prologue” and “In the Midst of Water: Origin and Destiny of Life.” This year’s topic is “Dimensions and Directions of Health: Choices in the Maze.”

This year’s topic was introduced at the society’s annual convention in April, 2002. Since that time chapters have been working to provide opportunities for learning about this complex topic for member- and non-member students alike. Already this year our chapter has hosted several guest speakers who have presented first-hand information on different aspects of health.

At the beginning of the semester one of our physical education department’s faculty gave a tour of our campus fitness center and shared information on how nutrition and exercise (or the lack thereof) directly impacts an individual’s health. At one of our recent meetings, one of our nursing faculty discussed with stu-

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Honor Societies for Budding Scientists

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dents the differences between the health care systems of the United States and Brazil. She and I had been members of a Rotary International exchange team to Brazil, so she discussed what she saw there and how it compares to what we have here at home. Most recently, a staff member from our local hospital spoke about professions related to health care in our immediate area, and soon a local physician will address our group on how we can remain healthy.

Honors Institutes

In addition to on-campus events, several students from our chapter recently attended a state-wide Honors Institute. At this conference they studied topics as diverse as stress management, diet and exercise, and how playing mind games can keep you healthy. We heard from guest speakers who related their real-life struggles in dealing with mental illness, cancer, and other physical ailments. Each of my students came away with new perspectives on a topic that affects them every minute of their lives in one way or another.

Phi Theta Kappa International also hosts a week-long International Honors Institute each year, usually on the campus of a four-year college or university. Last year's conference was held at Furman University. Experts gave presentations on the impacts of infectious diseases, genetics, aging, environment, and socioeconomic status (among other topics), and students were broken into small discussion groups which were led by chapter advisors from around the country. At last year's institute I served as the leader for a group of seventeen students who represented ten states (and four foreign countries). The discussions we had after each presentation were enlightening to me, and the students weren't shy about sharing their opinions and perspectives.

In our quest to give our students a "well-rounded" education, extracurricular activities are a tool we should take advantage of. Organizations like Phi Theta Kappa can help our students take more than just a certificate or diploma away from their community college experience. Encourage your students to take part in activities both on- and off-campus, and watch them grow into more than just budding scientists! ■

Editor's Note: For more information about Phi Theta Kappa, see your college's advisor or visit their site at <http://www.ptk.org>.



HANDS-ON AS A WAY OF LIFE

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In a previous edition of this publication I described Research Link 2000, a project to select, develop and disseminate a group of field-tested, research-based systems and instructional materials for introductory biology courses. Its major objective is to promote research activities by students and faculty at all levels of the undergraduate curriculum. Involving undergraduates in research activities is a very valuable learning experience, whether it is part of the standard laboratory course or a special project with a professor, and is an effective way to both challenge and excite students.

How does this work out in reality? Since I run one of the teaching sites (<http://biology.easternCT.edu/chlamy.htm>), I have tried to introduce research-based experiences into my courses. Exposure to this type of expertise prepares students for the type of work they will experience in their jobs or in graduate school.

ECSU is a small (~5,000) undergraduate state university that has traditionally taken in students with an average combined SAT of approximately 950. We have tried to find ways to provide our students with an education that will make them competitive in both the job and higher education markets. For over a decade our department's motto has been "hands-on" as a way of approaching biology. Our majors spend more time in the lab or in the field than they do in lecture. This is possible in large part because of our small size: our department seldom has more than 200 majors, with a fulltime faculty of ten. All courses have a lab/field component that is mandatory and this is always at least as lengthy as the lectures. Many institutions use this "hands-on" approach, but for those who have never tried it, I will suggest some ideas for getting started.

Many of the specific practices that are used in the laboratory exercises stress student participation in designing and conducting experiments. In the first two years this is kept fairly simple. An initial experiment may teach them some basic technique for which they then devise a follow-up experiment. For example, once they have learned to measure the rate of photosynthesis in isolated chloroplasts, they need to come up with experiments to measure the effect of changing some variable, such as temperature. Each group has to provide the instructor with details of how they will perform the experiment several days prior to the lab. They are questioned about the details of how the experiment will be

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Hands-On as a Way of Life

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performed, what will be needed, and the rationale behind their choices. At this point they often become aware of significant problems and have to rethink the process. For example, students may pick temperatures of 0°C, room temperature, and 100°C as their variables. Usually some guidance is needed to persuade them that more moderate values would be a better choice.



In upper level labs there are three strategies I use to give the students a taste of what research experiments—as opposed to canned teaching exercises—are like.

First, I try to use open-ended experiments, where the results are unknown. Where possible I use ideas that are an offshoot of published results, or from work that my independent research students are doing.

Second, I have groups of students design an experiment and run a section of the lab, teaching the rest of the class how to perform the experiment. This gives them a new respect for how hard it is to come up with such experiments and some experience in the teaching environment.

Lastly, I have students involved in mini-projects that typically last the last third of the semester. In most cases these are self-selected, and based on a mid-term paper that they have written.

All of these approaches have points in common. Students tend to rapidly assume ownership of the experiment/project and put in a lot of time in the preparations. At the same time, they generally vastly underestimate how much time will be needed to conduct the work. As a result, nearly all of the labs extend beyond the traditional three-hour format; I will often use a lecture period to complete the work. Few of the experiments or projects work out as envisaged; some don't work at all. Interestingly, this seldom discourages the students; instead they begin to appreciate how unpredictable research can be—which can be the catalyst for them to decide to try some independent study.

Independent study can be a relatively informal process, which any student can choose, or a more structured sequence as part of the Honors program. Overall about two thirds of our graduates engage in some form of independent study.

For independent study students I try to incorporate several features above and beyond the research component. Since I encourage students to work with me for

several semesters, I use the more experienced students as mentors for the newer ones. This practice uses students in their later semesters of research to teach the incoming students how to do the routine work and talk to them about their work.

At every opportunity I have students present their work: usually the first talk is to the other students in the lab. We expect independent study students to give a talk to the department, usually at the weekly Tri-Beta meeting. When they are ready we take them to local and regional meetings, and when possible, I have taken them to national meetings, such as AAAS.

Because I maintain close contacts with several prominent researchers within a 100-mile radius, I take the students to meet these people and see the labs whenever I can. Conversely, I try to have mainstream research people come and talk to the department. I am always amazed at how open many of these people are to making time for undergraduates!

I also encourage students to write grants. These are usually in-house, local, and small private-agency grants. While they are seldom worth more than a few hundred dollars, the experience is valuable for the students.

In the summer, I usually try to have the students work off-campus. While it would be nice to have them stay and work on their projects, this is probably not the best use of their time. Summer internships not only let them work with the latest techniques and equipment but, in many cases, the experience leads to job offers or invitations to apply to graduate school. Usually the students come back from such experiences full of ideas and enthusiastic about what they did. They are often far more confident about their abilities, and feel ready to elevate their goals for after graduation.

Whether this style of educating biology majors will work for other schools probably depends mostly on the faculty. I suspect that if a department can make the transition to a more “hands-on” approach, both they and their students will find it immensely rewarding. For the students, the experience is not only immediately satisfying but it also expands the options that they have following graduation. ■

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PLEASE REMEMBER...

Science courses often require students to master a large amount of terminology and core information before advancing to more creative learning activities. Many

students earned decent grades in high school science courses by memorizing facts, but they find that they can't recall that information in their college classes. How do you guide your students beyond rote memorization to a deeper understanding? And what strategies do you use to help students learn basic terminology—when some memorization is necessary?

How do you help students retain information?

In our next issue, we'll share your ideas and those of our contributors on this topic. Those who write in will be entered in a random drawing to receive a \$100 American Express gift certificate. To enter, please send an e-mail to strategies@aw.com, or fax your comments to 978-465-6658 by June 15, 2003. ■

MOTIVATIONAL SCHOLARSHIPS

Scholarship dollars can be motivational for science students. Each year, Benjamin Cummings sponsors a contest to award five scholarships to college students that can be used for their continuing education. In 2002, dozens of students applied for the Benjamin Cummings Allied Health Scholarship. Each submitted a short essay that discussed the ethical implications of recent biomedical developments.

2002 Allied Health Student Scholarship Winners

Congratulations to the following winners, who will each receive \$1,000 and a seat on our Student Advisory Board in Anatomy & Physiology/Microbiology.

- **Christine Bodecky**, Nebraska Wesleyan University
- **Carolyn Foley**, Contra Costa College, California
- **Jane Hammond**, Philadelphia College of Osteopathic Medicine
- **Miranda Martensen**, University of Southern Colorado
- **Heith Waddell**, Rocky Mountain College, Montana

The essay topic for the 2003 scholarship contest will be announced in March, 2003. Please visit www.aw.com/bc and select "Scholarships" for online application forms, deadlines, and more information. ■

OUR READERS SOUND OFF ... KEEPING GOOD STUDENTS MOTIVATED

Here is a selection of readers' responses to the question, "How do you keep your best students motivated?" To read all the responses, visit www.aw.com/bc and click on the Strategies link.

One way that I keep my best students motivated is by having all students complete discussion questions in an Internet Discussion Forum. These questions integrate what we have learned in class with things in their everyday lives. I have found that my best students truly like sharing their ideas with others. All students have the opportunity to share what they have learned as well as to read what others have to say about a specific topic.

I also encourage my students to visit and use various Internet sites while learning the concepts in the course. Often, my best students comment on things they like about the sites they visit. They tend to go to these sites to clarify a question they may have or to review a topic. Providing Internet sites also allows students to look at a topic from different perspectives.

—Reggie Cobb, Nash Community College, NC

I make time to sit down with students to discuss their options for a future career and to discuss the ethics of applications of the material. I also try and arrange for interested students to work in my lab. My time and interest keeps them motivated.

—Kimberly Turk, Mitchell Community College

Ask them challenging questions—to spur critical thinking and to apply concepts to real world situations. I also ask them to tutor less successful students.

—Dr. Indhu Gopal, Carolina's College of Health Sciences

If they keep a B+ or A average during the semester, they are not required to take the final lecture exam in General Biology. In addition, I direct them to read interesting case studies and to use all available sources in the community, such as traveling exhibits in museums and cultural centers.

—Cecilia Bianchi-Hall, Lenoir Community College

I have pre-nursing students who are very motivated by grades. I show them how to track their grade for every day of the semester, i.e., after each lab/quiz/assignment/exam is returned. They want to do well. I challenge them with difficult tests but explain everything completely so that they can understand. I also show them a three-step process for greatly increasing their studying efficiency.

—John Koch, John Tyler Community College ■

STRATEGIES FOR SUCCESS WORKSHOPS

Benjamin Cummings kicks off our fifteenth year of *Strategies for Success* Science Teaching Workshops with three free spring events:

- March 1, 2003* University of Tampa, Tampa, FL
- March 29, 2003* University of Houston, Houston, TX
- April 5, 2003* Loyola University, Chicago, IL

For updates, agendas, and registration forms, please visit www.aw.com/bc and select "Strategies Workshops," or call 800-950-2665 x2890. Our Web site now includes photos from recent workshops at the University of North Carolina, Chapel Hill, and Boston College!

BENJAMIN CUMMINGS CELEBRATES 25 YEARS OF PUBLISHING EXCELLENCE



Honored at our 25th anniversary celebration are authors (left to right) Ric Martini, Martha Taylor, Jane Reece, Neil Campbell, Elaine Marieb, and Eric Simon.

Since 1977, Benjamin Cummings has focused on providing science educators and students with the very highest quality textbooks and electronic media. Our goal in 2003 is to continue to improve and expand the products and services that help our customers reach their personal and professional goals. We invite you to view a silver anniversary timeline celebrating our company's history and publishing achievements at www.aw.com/bc/timeline.



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UPCOMING CONFERENCES

Texas Community College Teachers Association

February 20–22, Austin, TX
www.tccta.org

HAPS Regional Conference

March 1, University of Illinois, Chicago, IL
Featuring keynote speaker William Perotti, this event will focus on "Improving and Assessing Learning in Anatomy & Physiology." For details, e-mail Mary Lou Bareither at mbareith@uic.edu.

American Chemical Society

March 23–26, New Orleans, LA www.acs.org
Benjamin Cummings is hosting a lunchtime focus group on March 25 for General Chemistry instructors. Contact Susan Winslow for details at susan.winslow@aw.com.

Experimental Biology

April 12–14, San Diego, CA www.faseb.org

The Empire State Association of Two Year College Biologists

April 25–27, 2003, Williams Lake Hotel and Conference Center, Rosendale, NY

This year's conference will investigate the current push by various organizations to subvert or distort the biology curriculum. For more information, please e-mail Frank Reiser at freiser@optonline.net.

American Society for Microbiology

May 19–22, Washington, DC www.asmta.org

Human Anatomy & Physiology Society

May 31–June 4, Philadelphia, PA www.hapsweb.org

ENVIRONMENTAL SCIENCE INSTRUCTORS NEEDED

Benjamin Cummings is hosting a series of focus groups with Environmental Science instructors this spring. For details and a schedule of dates, please contact Susan Winslow at susan.winslow@aw.com. ■

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