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**HAPS-EDucator** is the official publication of the Human Anatomy and Physiology Society (HAPS) and is published four times per year. Major goals of the Human Anatomy and Physiology Society are to promote communication among teachers of human anatomy and physiology in colleges, universities, and related institutions; to present workshops and conferences, both regional and national, where members can obtain information about the latest developments in the health and science fields; and to encourage educational research and publication by HAPS members. HAPS was established in 1989.

Annual membership dues are $50 for full time faculty, and $35 for part-time and retired faculty. Annual membership renewals shall be due on January 1, April 1, July 1, or October 1. New members shall renew on whichever date most closely follows the date of their initial membership. **HAPS Hotline: (800) 448-HAPS (4277).** Information on membership, meetings, and more! Send correspondence to: HAPS, 8000 Bonhomme, Suite 412, St. Louis, MO 63105. Check out our new webpage at: [http://www.hapsweb.org/](http://www.hapsweb.org/)

**SUBMISSIONS TO HAPS-EDucator**

Papers for publication, requests for information, positions available and wanted and letters to the editor are welcome. Articles may be submitted to the editor by e-mail attachment as Microsoft Word or Word Perfect file or on 3.5" double density disks—please include a hard copy as a backup. If references are included, please follow the methods suggested in *Scientific Style and Format: The CBE Manual for Authors, Editors, and Publishers*, 6th Edition, Style Manual Committee (Council of Biology Editors) Cambridge, Cambridge University Press. 1994.

It is the policy of the Human Anatomy and Physiology Society (HAPS) that any advertising appearing in its publication(s) must be related to the teaching of anatomy and physiology. The **HAPS-EDucator** Editor and Advisory Panel jointly determine whether an advertisement meets the criteria of HAPS. Any advertisement that is deemed not to meet the needs of the organization will not be printed, and the advertisement plus any monies collected from the advertiser will be returned. The opinions reflected in advertising that appear in this publication do not necessarily represent the opinions of HAPS. Advertisement of a product in the **HAPS-EDucator** does not represent endorsement of that product by HAPS. Contact the Editor for information on advertising rates, advertisement size, and the procedure for submitting an advertisement to **HAPS-EDucator** for publication.

**DEADLINES FOR SUBMITTING MATERIAL TO HAPS-EDucator:** April 15 (Summer issue); August 1 (Fall issue); November 1 (Winter issue); February 1 (Spring issue).

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I began writing this shortly after returning from our fantastic Annual Meeting in the dry heat of Phoenix—and have continued writing it on into the summer. I returned from Phoenix already looking forward to the “Time to Chime” in Philadelphia that Lakshmi Atchison has set for May 31 - June 5, 2003, but discipline nudged me toward the many things that must take place within HAPS between now and then.

On July 1, the following people joined me as we assumed our respective duties as HAPS officers: Past-President Bill Perrotti (NY), President-Elect Phil Tate (AZ), Treasurer Gail Jenkins (MD), Secretary Barbara Cocanour (MA), Northeast Regional Director Elizabeth Harper (NY), South Regional Director Bobby Baldridge (KY), Central Regional Director Deb Wiep (WI), West Regional Director Jim Pendley (CA), and Colin Wheatley (Chair, Publications Board). In addition, a number of committees received new chairs. These include Animal Use (John Waters), Annual Conference (Henry Ruschin), Cadaver Use (Christine Ilitis), Core Curriculum and Assessment (Murray Jensen and Chuck Wert, Co-Chairs), Membership Development (Donna White), Nominating (Phil Tate), Safety (Karen McMahon), Technology (Dayton Ford), and Testing (Janis Thompson).

We begin the year with much gratitude to those members who have completed their terms of service on the Board of Directors and now leave the new Board with fantastic opportunities to move forward. These are Henry Ruschin (Past President), John Waters (Treasurer), Izak Paul (West Regional Director), Don Kisiel (Northeast Regional Director) and Caryl Tickner (Chair, Publications Board). Retiring committee chairs include David Parker (Annual Conferences), Dan Lemons (Core Curriculum and Assessment), Tom Lancraft (Technology), Sam Drogo (Testing), and Colleen Nolan (Safety). We are so grateful for the services of each of these valued members!

The “State of the Society” as these people complete their terms of service is very good, largely owing to their hard work and the leadership of outgoing President, Bill Perrotti. In recognition of Bill’s contributions to HAPS during his term as President, the Board and Steering Committee, with a generous contribution by Dee Silverthorn, donated a total of $520 to the Robert Anthony Scholarship Fund in Bill’s honor. All of us wanted to express our gratitude to Bill for a year of outstanding leadership.

It is also pleasing to note that HAPS now has an approved Constitution and Bylaws containing a much streamlined and clarified committee structure. There are a number of “Standing Committees” to carry out the ongoing work of the society, and a few other “Subcommittees” and “Task Forces” that can be called into duty by the Board of Directors as needed. You will find the names of all current HAPS committees, along with their respective chairpersons, inside the back cover of this journal. I urge you to examine the list regularly, with an eye toward finding a place where your own special talents might best fit.

Might I suggest that you consider hosting a Regional Conference in your area? The best way to begin this is to drop an email to Mary Bracken (bracken@tvcc.edu), Chair of the Regional Conference Committee. Mary will provide you with the “Guide For Coordinators of Regional Conferences” (a document that will direct you in obtaining start up funds, mailing labels, vendor information, etc. and will help make your conference a success). She will be your primary source of information about how to organize a local conference. However if you still want more information and help, you can consult other members who have presented earlier local conferences, or you can tap the experiences of those who have conferences currently in the planning stages. For example, my colleagues Richard Faircloth (rfaircloth@aacc.edu), Javanika Mody (jmody@aacc.edu), and Carol Veil (cbevil@aacc.edu) at Anne Arundel Community College (Northeast Region) have a magnificent program set for a Regional Conference near Annapolis, MD, on October 19, 2002. It will feature a panel discussion on the Human Genome Project with a biologist, psychologist, legal expert, and mathematician, as well as a presentation on forensic evidence gathering from a clinical perspective. There will also be breakout workshops, exhibitors, door prizes, and lunch discussions.

In the Central Region, Dawn Balmer (dawn.jim.balmer@sympatico.ca), Gwen Buttle (gbuttle@gbrowne.on.ca), and Henry Ruschin (ruschin@humber.ca) have set October 24-25, 2003 for a Regional Conference in Toronto; and Mary Lou Bareith (mbareith@uic.edu) is working on a Regional Conference for March 1, 2003, in the Chicago area. Still others are in the works for locations in British Columbia, California, and Minnesota during the spring and fall of 2003.

You probably have noticed that HAPS members are increasingly using email to keep in touch with one another and to conduct society business at minimum cost. Added to that, our new and improved web page (www.hapsweb.org) is up and ready to broaden our outreach even further! While the Board is striving to keep hard copies of important documents available to those who require them—HAPS-EDucator being one—our persistent need...
Greetings - continued from page 3

to control expenses leads us to urge everyone to gain access to the
net as soon as possible.

We are pleased to continue our relationships with the
American Association of Anatomists (AAA), The American Physi-
ological Society (APS), the National Association of Biology Teach-
ers (NABT), and the Association of Biological Laboratory Educa-
tors (ABLE). Such collegial associations are of enormous value to
HAPS. If you might be interested in serving as a HAPS liaison
with one of them, please contact someone on the Board of Direc-
tors to make that interest known.

In closing, I would like to share the good news resulting
from the Board’s efforts to find a Marketing Manager to replace
Gail Jenkins, our newly elected Treasurer. We are most fortunate
to have Dr. Karen LaFleur Stewart take on that role. As many of
you know, Karen has previously served HAPS as President, An-
nual Conference Coordinator, Regional Director, member of our
Editorial Board, author of the first HAPS Policy Manual, and
founder of our Grants and Scholarships Committee. We are truly
fortunate to have her now assume the important role of Marketing
Manager.

We also are fortunate to have Donna White agree to repre-
sent the interests of HAPS in the process of integrating our new
web site with the database used by our managing organization,
Organization Services Group (OSG). Not only does Donna, as Chair
of the Membership Development Committee, have a keen interest
in optimizing the web site for serving our members, but she is also
extremely well qualified to do so. Her experience as a member of
the HAPS Board of Directors and as Regional Director (South)
afford her extraordinary knowledge of the needs of HAPS, and her
familiarity with both the web site consulting firm (YTZ Technolo-
gies) and OSG places her in an optimal position to see that the web
site is developed properly from its very beginning.

Clearly, we have many great things to look forward to in
the coming year of HAPS activities and many great people to carry
them out. Let us keep in touch!

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17th Annual HAPS Conference
Saturday May 31-June 4, 2003
Philadelphia, Pennsylvania

Lakshmi Atchison, Ph.D.
2003 Conference Chairperson & Coordinator
Professor & Chair of Biology
Chestnut Hill College
Philadelphia, PA 19118-2693

Preparation for the HAPS 2003 conference is proceeding at a steady pace. Before you know it, the conference will be here and HAPS will kick off with its traditional reception on Saturday, May 31, 2003. We will celebrate the 17th Annual Conference in the hometown of the Liberty Bell, the birthplace of our nation’s freedom, and America’s most historic square mile - the place where history comes alive.

What you should know about the bell: For Whom the Bell T tolled:

Today the Liberty Bell bears silent testimony to many milestones etched in America’s past. Millions of people come to Philadelphia’s Independence Mall to catch a glimpse of this enduring symbol of American liberty.

The bell was originally sent from London in 1752 and was recast in Philadelphia by John Pass and John Stow in 1753. The bell’s signature crack was reported to have occurred on July 8, 1835, when it tolled to mark the passing of Chief Justice John Marshall. Through the years, the crack extended. The bell’s last clear note was heard in February 1846 when it rang in tribute to the nation’s first president.

Fun Facts about the Bell:
- Each year 1.6 million people visit the Liberty Bell.
- The bell weighs 2,080 pounds.
- The bell is composed of 70 percent copper, 25 percent tin, with traces of lead, zinc, arsenic, gold and silver.
- The bell is suspended from what is believed to be its original yoke, made of American elm.
- The bell was ordered to be cast in 1751 by Isaac Norris, the speaker of the assembly, for the purpose of calling citizens for celebration, mourning, or simply to hear the day’s news.

Philadelphia: The ideal place for a convention!
Philadelphia is one of the most popular convention and tourist destinations in the nation. As host to the 2000 Republican National Convention Philadelphia and welcomed 45,000 participants, including 15,000 national and international journalists! Philadelphia was also the proud host of the 2001 and 2002 ESPN X Games and the 2002 National Basketball Association All-Star Game. Each year Philadelphia hosts the Penn Relays and often hosts the annual Army-Navy football game. The city will also host the 2006 Professional Conference Management Association (PCMA). Philadelphia, of course, is eager to host the HAPS 2003 Conference in the heart of the City! The Philadelphia Convention and Visitor Bureau (PCVB) provides service to meeting and convention planners and to the travel trade 24 hours a day, seven days a week. The Convention and Visitor Bureau is located at 1515 Market St., Philadelphia, PA 19102. You can view city and hotel maps, learn about convention services, request brochures and materials, and explore more than 1,200 member organizations at your convenience using PCVB’s on-line service at www.pcvb.org.

Getting around:
Getting to Philadelphia is easy. The City is served by all modes of transportation. The Philadelphia International Airport, which is eight miles from Center City, handles air transportation for more than 20 airlines. By rail, Amtrak’s 30th Street Station is a major East Coast commuting hub for train travelers. Major regional highways, such as I-95, I-76, and the New Jersey Turnpike make getting to the City and around the region convenient by car or bus.

Once you are here, you will find that Philadelphia is a walker’s paradise! Center City provides great opportunity for visitors to stroll and enjoy the sites of the City. The City’s transit system is extensive, with a vast network of bus, subway, train and trolley services, including Phlash, the colorful friendly mover to get you to your favorite destinations. Taxis also are abundant in the city. I will write more details about getting around the city and about the city’s ground transportation in future HAPS-EDucator articles.

Explore Philadelphia’s Countryside:
The following are some of popular tours both in Philadelphia and in the surrounding countryside. During your stay in Philadelphia, you will have several options to visit many sights around the region. The visitor bureau can assist you in planning your afternoon or day excursions.

- Brandywine Valley: Less than hour’s drive from Philadelphia is the Brandywine Valley. Visit the Brandywine Battlefield, where Washington and his troops suffered a disastrous defeat at the hands of the British. Visit the spectacular Longwood Gardens, a world famous horticultural wonderland. Make sure to

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visit the Brandywine River Museum, a century-old gristmill now housing the works of three generations of Wyeth’s collections. For more information, visit Brandywine Convention Bureau at www.brandywinecvb.org.

- **Bucks County**: Picturesque Bucks County, a short drive from Philadelphia, presents a variety of sightseeing choices. Washington’s Crossing State Park memorializes George Washington’s crossing of the Delaware River. You will love a visit to New Hope, a village whose streets are lined with quaint shops and restaurants. For details, visit Bucks County Convention & Visitor Bureau at www.bcvb.org.

- **Germantown**: This city dates back to 1683 when Philadelphia founder William Penn deeded an area six miles north of the city to a group of German settlers. Germantown today offers a number of interesting historical homes and landmarks. Visit Chestnut Hill and discover a charming village only 25 minutes from downtown Philadelphia. Chestnut Hill features intriguing restaurants, art galleries, antiques stores, boutiques, and many specialty shops. Enjoy the stroll along the sidewalks that line the cobblestone Germantown Avenue. Chestnut Hill College (your host institution) is located on the top of the hill in beautiful historic Chestnut Hill.

- **Peddler’s Village**: Enjoy this 18th century village where you can take a nostalgic ride on the Grand Carousel, shop in 75 unique retail shops, and dine in pubs, bistro’s, or upscale restaurants on 42 acres of colonial style buildings, landscaped grounds, and brick walkways. Peddler’s Village is on Routes 202 and 263 Lahaska, PA. For more details visit their website at www.peddlersvillage.com

- **Pennsylvania Dutch Country**: The exquisite countryside of the Amish opens a host of tour possibilities from a working Amish farm to a Lancaster-county farmer’s market to a Pennsylvania Dutch-style family feast. For Amish tours contact: www.amishexperience.com

- **Valley Forge**: Just a half-hour from Philadelphia, Valley Forge National Historical Park recreates for visitors the bitter winter of 1777-1778 when Washington and his troops camped there. Washington’s Headquarters, soldiers’ huts, Washington Memorial Chapel, and much more are open to the public. You will also find the nation’s largest shopping malls in the neighboring King of Prussia. For further details, visit Valley Forge Convention & Visitor’s Bureau at www.valleyforge.org.

Finally, if your family is coming with you on your trip to Philadelphia, get ready for a bounty of activities sure to appeal to every age and interest.

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**HAPS Workshop Site**

**The Host Institution**

**Chestnut Hill College,**

9601 Germantown Avenue

Philadelphia, PA 19118-2693

www.chc.edu

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**Fournier Hall**, dedicated in 1928, houses classrooms, residence facilities, Fournier Chapel, and an indoor swimming pool. Umbrian Romanesque in style, its bell tower, tile roof, and facade recall the Basilica of St. Francis of Assisi. The interior features Tudor oak paneling and brass-lined marble and terrazzo floors.
St. Joseph Hall, completed in 1902. This six-story structure features a towered Loire Valley façade and an arched Gothic porte-cochere. Inside, a Greco-Roman rotunda rises 1000 feet from a marble floor with balconies on four floors and a grand chestnut staircase crowned by a skylight of stained glass.

Barbara D’lorio Martino Hall. Our newest building, this three level multi-use building is designed to match the historic architecture of the college. The first floor features a multipurpose hall used as a performance center, gymnasium, or convocation center. The second and third floors house state-of-the-art "smart" classrooms and facilities for distance learning, video productions, and satellite communications. Outside, a beautifully landscaped courtyard serves as a "town square" for the campus.

HAPS REGIONAL CONFERENCE

Human Anatomy & Physiology Central Regional Conference at
THE UNIVERSITY OF ILLINOIS AT CHICAGO

SATURDAY, MARCH 1, 2003

For information contact:

Mary Lou Bareither
School of Kinesiology
University of Illinois at Chicago
901 W. Roosevelt Road, Chicago, Illinois 60608
mbareith@uic.edu 312.996.5559
Mission statements of many institutions of higher education profess a commitment to teach critical thinking. However, one seldom finds a course title that directly addresses this goal in the college bulletin. Rather, critical thinking remains the province of all subjects, as it should be. Yet how much of a course actually focuses on teaching critical thinking versus providing test questions and assignments that require a student to demonstrate critical thinking skills? In my own teaching, the answer to that question forced me to look carefully at what model for critical thinking I provided for my students. In this article, I explore the place for problem-based learning as a method for teaching critical thinking in science courses, specifically anatomy and physiology.

The National Science Foundation, particularly through the work of Project Kaleidoscope, enjoins educators in science, mathematics, and engineering to promote active learning in the classroom (1). Within the field of education, Collins, Brown, and Holm focused attention on the distinction between “formal schooling” and “apprenticeship” in 1991 (2). They presented the case for teaching critical thinking through what they called “cognitive apprenticeship…a model of instruction that works to make thinking visible.” I contend that problem-based learning provides a scaffolding for teaching critical thinking while fulfilling the NSF objective of introducing active learning into science classrooms.

Problem based learning (PBL) teaches critical thinking by engaging students in authentic real world problems that relate to course content. Students work in teams to identify and address the problems in each case scenario. The team follows a prescribed process for attacking the case. Within the problem case, students adopt a realistic role that requires judgment and decision-making.

In the early 1970’s, Howard S. Barrows led the campaign to introduce problem-based learning into medical school education (3). He recognized the need for medical students to become comfortable with applying the information they acquired through course work to the type of complex real world problems that they would soon encounter in the clinic. The fact that real world problems typically cut across a variety of subject disciplines made problem based learning an attractive format for students to engage in multidimensional problem solving.

Today problem based learning is widely employed in a variety of professional schools as well as in elementary and high school classrooms (4, 5).

In the problem based learning method, students follow defined steps to address the case. In my opinion, this emphasis on process distinguishes problem based learning from case based studies where a student engages a real world problem but is directed to answer particular questions posed by the case author. In problem based learning, the students must define the issues to be addressed. While this may seem a daunting task for college freshmen, the fact that students work together as a team and follow a step-by-step process makes the experience less threatening and more rewarding. Furthermore, the process prescribed for problem based learning resembles the standard method for scientific inquiry. Therefore, the use of PBL in science courses reinforces the scientific approach to problem solving.

The defined tasks for PBL are listed in Table 1. Briefly stated, the PBL team will: (a) read the case out loud; (b) define the problem; (c) identify and list what is already known (drawing either from the given problem information or from the wealth of information that group members bring from personal experience); (d) determine the learning issues that the team needs to explore in order to validate the hypothesis; (e) assign learning issues to team members who research the necessary information and report their findings back to the group; and, (f) after exploring the learning issues, either affirm or reject the hypothesis and decide on an appropriate action plan (i.e., what they should do).

To accomplish these tasks, the team must meet at least twice. Table 2 gives a step-by-step guide for both of these PBL sessions. I call the first session the brainstorming session. During that meeting, the group reads the case, develops an hypothesis, identifies the relevant problem information already known, defines the learning issues that need to be explored, and assigns each team member one or more learning issues. The task of developing an hypothesis usually creates some anxiety for the novice team. However, this situation provides an opportunity to demystify the notion of an hypothesis. I encourage students to state in their own words what they think is happening. Initially, students often develop hypotheses that are very bland and overly broad. However, I urge students to word the hypothesis so that it is both specific and testable. In other words, the
information that they acquire through the learning issues should either support the hypothesis or else lead them to reject the hypothesis. I call the second session the information sharing session. At that session team members share the information about their learning issues with each other. Then the team discusses whether or not the original hypothesis is still relevant. If not, a new hypothesis might be proposed and the process of exploring new learning issues would then ensue. If the team affirms the original hypothesis, the members then decide on an action plan that concludes the case. This action plan often takes the form of a written report or a class presentation. As in the real world, the students do not have the luxury of endless inquiry. Each case has a defined period of time for exploration. The team must base its final resolution of the problem on the best information currently available to them, providing an opportunity for making decisions and exercising judgment.

In order to reinforce and facilitate the process, students assume defined roles within the team: Leader, Recorder, Reader, and Team Member. The Leader keeps attendance, moderates the discussion, and keeps the team focused on the problem case. The Recorder keeps a record of the discussion and prepares this record in the format of the Case History. The Case History must include: (a) the hypothesis, (b) a summary of the problem information known, (c) the learning issues and which team member was responsible for each, and (d) the action plan or conclusion about the original hypothesis. The Reader obtains the materials from the instructor and reads the case aloud during the brainstorming session. All team members are expected to attend the team meetings, participate in the discussion, and demonstrate cooperation and flexibility in dealing with the team. Membership on a team extends over the entire semester. Each student has an opportunity to take a leadership role on one or more PBL cases.

The instructor serves as the group facilitator. In problem-based learning, students take responsibility for their learning. The facilitator should not be the leader of the group. Instead, he/she should assure that all team members participate and that the discussion stays within reasonable boundaries. It is not necessary for the facilitator to be an authority on the subject being discussed. A good facilitator should establish a comfortable atmosphere for the team. This involves arranging the group so that all team members can see and hear each other. In addition, the facilitator makes sure that group members introduce themselves to each other at the initial meeting. A good facilitator promotes discussion with open-ended questions like: "Would someone please explain that?" or "Could someone explain that in a couple of sentences?" or "Do the rest of you agree with that? Give a reason that you agree or disagree." The facilitator also encourages the group to reflect on their progress as they explore the case. This reflection may include summarizing the information learned, addressing areas not covered, or exploring ways to improve teamwork.

After mastering the mechanics of conducting PBL sessions, an instructor must confront the challenging task of assessing student performance. My Anatomy and Physiology courses include lecture, laboratory, and problem based learning sessions. I believe that this variety of teaching approaches best addresses the different learning preferences of my students. Problem based learning requires a significant amount of student work. Therefore, the PBL portion of the course accounts for approximately 25% of the total grade. In determining the PBL grade, I consider the participation of the student in the process, the function of the team, and the quality of the material researched and discussed. This assessment is based on personal observations as well as on the materials that are submitted by the team at the end of each PBL case. Table 3 summarizes the items considered in assessment. Since one of the intended outcomes of PBL is development of communication skills and the ability to work with a small group, I do include attendance in the assessment. If a student misses a PBL session, he/she cannot participate in the group’s work. The team Recorder prepares the Case History; however, the team as a whole is responsible for reviewing and modifying of this record before it is submitted.

Each team member prepares his/her own Summary Report for the Learning Issue. I require students to summarize the information they gathered in their own words. This avoids the submission of material printed off the Internet and marked with a highlighter. In addition, each Summary Report must include the references used. Students learn the conventional format for citations and references. They also learn to evaluate the reliability of their sources. For instance, information about a product that comes from the manufacturer’s web page must be balanced with information from more objective sources. The most important feature of each summary is the explanation of how the information about the learning issue relates to the case and hypothesis.

Each student also completes a Peer Evaluation Form (see Table 4). To complete the form, each student must reflect on the performance of the team. Students typically improve their team performance over the course of the semester. The form of the Final Report depends on the action plan. Sometimes I require a written team report or a team presentation. Other times I require each student to write an individual report based on the research of the whole group. Since I believe that learning both the process of inquiry and the ability to communicate effectively about scientific matters are important elements of the PBL experience, the assessment is based on approximately 50% process. The remaining 50% derives from the quality and understanding of the content material for that particular case.

Another challenge for the instructor is creating PBL cases. Some cases are published on the web (see the list of helpful websites in Table 5). Generally, my classes explore five or six PBL cases in a semester. Therefore I start by picking those five or six topics that, when spread out over the semester, will correlate with the content being explored in lecture and lab.

To do this I suggest the following for each topic, I define the learning objectives for the case by constructing a concept map. Then I develop a real-world situation that incorporates as many as of these concepts as possible, making sure that the student is given a point of view that puts him/her in a realistic role. In other words, I do not expect the student to perform a medical diagnosis as a freshman in college. However, after covering course content, students should be able to explain the scientific and relevant medical information to a friend, neighbor, relative, or patient. I expect students to make connections between material in the Anatomy and Physiology course and other courses that they likely have taken such as chemistry, microbiology, etc. If possible, I formulate the case so that the student must come to some judgment and defend that judgment.

For a sample case, see Table 6. The Botox Beauty case involves an understanding of the neuromuscular junction, one of the fundamental topics in most physiology courses. After reading
Along with challenges come rewards. In my experience, the end-of-semester course evaluations indicate an overwhelmingly positive student response to the PBL portion of the course. Most students acknowledge that PBL forces them to do a lot of work outside the classroom. However, they also recognize that PBL integrated the course material in a very memorable way. Beyond making the connection between the real world and course content, many students also see the application of the process to other aspects of their lives. One student told me how she had used the PBL approach when buying her new car!

Problem based learning also provides students with an opportunity to demonstrate their abilities in a different context. This is particularly helpful to those students who are poor test takers despite the fact that they have mastered the material. Today’s educational system relies heavily on test results, and for many students good results will be necessary to gain entry into postgraduate schools. However, in the real world, most professionals are not judged by their test-taking ability but by their ability to tackle and deal with the problems that regularly confront their institution. Rewarding student performance in this mode seems only fair. The instructor who is writing a letter of recommendation for a student can draw on a much richer text if the student has been assessed in the context of PBL, as well as by the standard course test.

For instructors who teach Anatomy and Physiology year after year, problem based learning helps to avoid stagnation. The basic course content does not change. However, an instructor can vary the focus of PBL cases. In fact, the creative activity of developing cases can be very rewarding. Often implementing PBL cases permits the instructor to enjoy the unexpected in the classroom. In my opinion, when students become active learners, the instructor becomes a more active teacher, and all parties benefit from the experience.

### Table 1: Introducing Students to the Problem Based Learning Method

In this course, you will work on problem solving as teams of students. These teams will critically examine problems relevant to the course content. During PBL sessions, students assume the primary leadership role in the learning process. The faculty instructor assumes the role of team facilitator, guide, or coach.

Teams are directed to follow a defined analytical process. This structured process entails tasks that answer the following four questions.

**Question:**
1. What is the problem?
2. What do we know?
3. What do we need to know?
4. What should we do?

**Task:**
1. Make a problem statement or hypothesis.
2. Organize and analyze the problem information given.
3. Identify the learning issues that need to be understood to complete the problem.
4. Develop a team action plan to explore learning issues and ultimately propose a resolution of the problem.

The problems encountered in PBL sessions do not necessarily have “one right answer.” Therefore, different teams may develop different action plans.

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Table 2: A Step-by-step Guide for Student Teams Engaged in Problem Based Learning

Conducting the brainstorming session:
Step 1: Arrange the chairs so that all team members can see and hear each other. Introduce all team members to each other.
Step 2: Choose one team member to be the Leader for the Problem Case. This student’s job is to (a) record attendance on the Attendance Record, (b) moderate the discussion so that every team member has an opportunity to participate, and (c) keep the team focused on the problem case.
Step 3: Choose one team member to be the Recorder for the Problem Case. This student records the notes and other information that the team decides by consensus is important. The Recorder prepares the Case History that is turned in with each Problem Case.
Step 4: Choose one team member to be the Reader for the Problem Case. This student is responsible for getting the problem case information from the instructor and distributing this information to his/her team members. He/she reads aloud the case information in order to begin the team discussion.
Step 5: After reading the problem case information, the team discusses the case and team members suggest hypotheses that might explain the case. The Recorder keeps track of these suggested hypotheses. The final case history should include those hypotheses that the team agreed were worth consideration.
Step 6: Team members determine what they already know about the problem. This includes deciding what information presented in the case is relevant to solving the problem. In addition team members may introduce information that they know from past experience or studies. The Recorder keeps notes of this discussion. (Steps 5 and 6 are repeated as various hypotheses are considered.)
Step 7: After exhausting the discussion of the information available, the team decides what new information needs to be obtained to further understand the problem case. These become the learning issues. The Discussion Leader makes sure that by the end of the brainstorming session each team member has assumed the task of researching one or more of these learning issues.

Conducting the information sharing session:
Step 1: The Leader records attendance on the Attendance Record and summarizes the problem situation to focus the attention of the team.
Step 2: Individual team members report information that they have researched. Each team member gives copies of the Summary Report for Learning Issues to the other team members. The team discusses how this information can be used to solve the problem. Each team member should have his/her information organized in a way that is can be shared with the entire team.
Step 3: Before the end of this session, the team must decide on the resolution of the problem. If a team report is to be prepared, the team must decide how to prepare the report. It is the responsibility of the entire team to be sure that the presentation or report (either individual or team) is well written and reflects the effort of the team. Copies of the team report should be distributed to all team members.

Table 3: Assessment of Problem Based Learning

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent of grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance at all team meetings</td>
<td>15</td>
</tr>
<tr>
<td>Leader submits attendance record.</td>
<td></td>
</tr>
<tr>
<td>Case History</td>
<td>10</td>
</tr>
<tr>
<td>Recorder writes down hypothesis, problem information, learning issues, and action plan.</td>
<td></td>
</tr>
<tr>
<td>Summary Report of Learning Issue</td>
<td>25</td>
</tr>
<tr>
<td>Each student provides a written summary of the material researched for his/her learning issue. The report must include references and an explanation of the relevance of the material to the hypothesis.</td>
<td></td>
</tr>
<tr>
<td>Peer Evaluation Form</td>
<td>5</td>
</tr>
<tr>
<td>Each student completes a form that evaluates the performance of the team. (See Table 4)</td>
<td></td>
</tr>
<tr>
<td>Participation in Discussion</td>
<td>20</td>
</tr>
<tr>
<td>Each student’s participation is based on the observations of the facilitator as well as the evaluation by fellow team members in the Peer Evaluation Form.</td>
<td></td>
</tr>
<tr>
<td>Final Report or Presentation</td>
<td>25</td>
</tr>
</tbody>
</table>

Educational Issues - continued on page 12
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### Table 4: Sample Peer Evaluation Form

Evaluator's name: _______________________

Instructions: Fill in the names of your team in the appropriate spaces. Assign points for each team member's performance (0 = little or no evidence of meeting criterion; 1 = some evidence of meeting criterion; 2 = ample evidence of meeting criterion)

<table>
<thead>
<tr>
<th>role:</th>
<th>leader</th>
<th>recorder</th>
<th>reader</th>
<th>member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of team member:</td>
<td>keeps attendance</td>
<td>prepares case history</td>
<td>reads case aloud clearly</td>
<td>shows cooperation and flexibility</td>
</tr>
<tr>
<td>positive characteristics of role:</td>
<td>moderates discussion; keeps team focused</td>
<td>shows cooperation and flexibility</td>
<td>shows cooperation and flexibility</td>
<td></td>
</tr>
</tbody>
</table>

Criteria:
1. Performs role well [i.e., displays characteristics listed above]
2. Does not miss team activities by being absent or late.
3. Takes initiative to explore information relevant to the case.
4. Comes to class prepared to share information; brings copies of learning issue information for team members.
5. Contributes to the discussion; relates learning issue to hypothesis.
6. Listens and shows respect for the opinions of others.
7. Does not dominate discussion; elicits ideas and comments from other team members.
8. Accepts constructive criticism; gives constructive feedback
9. Communicates clearly.
10. Works to synthesize all the information and develop the final report or presentation.

TOTAL POINTS

### Table 5: Web Sites of Interest

There are many web sites available for exploring the "why?" and "how to?" of PBL. Any search engine will give you a host of web sites. Some sites also share actual cases. Often cases will be found when you search a particular topic. There is no shortage of information.

- University of Delaware  
  http://www.udel.edu/pbl  
  This site contains information about PBL and also cases used in a variety of science courses.
- Southern Illinois School of Medicine - Problem Based Learning Initiative  
  http://edaff.siumed.edu  
  http://www.plbi.org  
  This site has information about PBL. There are some cases related to medicine but not all are accessible to the public.
- SUNY - Buffalo  
  http://ublib.buffalo.edu/libraries/projects/cases  
  This site has information about PBL. There are cases related science.
- Illinois Math and Science Academy  
  http://www.imsa.edu/team  
  This site has information on PBL in general. There is a focus on PBL in secondary school.
- Ohio State University College of Medicine  
  http://www.med.ohio-state.edu/PBL  
  This site has information about PBL. Some medically relevant cases are available.
Table 6: A Sample Problem: BOTOX BEAUTY

Your extended family has gathered together to celebrate Thanksgiving. After a pleasant turkey dinner, the group relaxes over dessert.

Your Aunt Diana is visiting from New York where she works as an actress on stage. She discloses that she has decided to undergo Botox treatment to relieve facial lines around her eyes. At thirty-five, she feels pressure to compete for roles that might be given to younger actresses. She does not want crow's feet and frown lines to derail her chances. She has read about the treatment at a local clinic called Chelsea Eye and also found that the American Academy of Dermatology endorsed the treatment for some situations. She shows you a copy of the article.

Your sister Mary is studying Family and Consumer Science. She relates that in her course on food preservation, she learned that botulinum toxin presented a significant health problem. As an example to support her contention, she digs out an article by the Ohio State Extension service. The article warns about serious health problems related to botulinum toxin poisoning through improperly handled food.

Your brother James opens a recent issue of the New Yorker magazine to share a cartoon. He laughingly warns Aunt Diana that she might end up like the lady in the cartoon if she did too much Botoxing. Diana claims that could never happen. Mary insists that it is still a potentially serious health problem.

They all know that you are studying physiology. They ask you to explain the basic physiological mechanism and effect of botulinum toxin. Furthermore, they ask you to help resolve their differences of opinion. They want to know if the cartoon correctly warns of health problems from too much “Botox.”

NOTE:
The cartoon and the articles from the American Academy of Dermatology and the Ohio State Extension service are provided and distributed on separate sheets.
The cartoon shows a man carrying a woman horizontally under his arm. The woman is rigid and appears almost like a mannequin.
The caption reads, “Honey, let’s lay off the Botox for a while, shall we?”

References

1. http://www.pkal.org (Project Kaleidoscope)


5. http://cfge.wm.edu/Curriculum/Science_materials.htm (Guide to Teaching a Problem Based Science Curriculum for High Ability Learners-Center for Gifted Education at the College of William and Mary)


Welcome to YOUR world—the world of the classroom (or the laboratory) where pieces of educational pedagogy come together with scientific facts and phenomena to make a meaningful whole for the eager-to-learn students perched patiently in front of you! Is that introduction a bit pompous? How about this instead? **EDU-Snippets**—your eye on the NOW classroom? Oh dear! That is just a bit too hip!

Anyway, tah-dah! Introducing **EDU-Snippets**!! Yes, an exciting new column right here in the HAPS-EDucator! We (namely, Richard Faircloth and Roberta Meehan) have teamed up to challenge your instructional acumen! The plan is to include this feature in every issue of the HAPS-EDucator. We did have to go out to the highways and byways and solicit input for this first column. We hope that by the next issue, we will be so inundated with your ideas that we will have to make some very difficult deletion decisions!

**Here Is What We Are Doing (And What We Want You To Do)**....

The purpose of this column is to make those up-to-the-minute topics and ideas we see around us intimately relevant to your (our!) classes.

Just a couple of paragraphs from you will do. Do not worry if you have forgotten where to put a comma. We are both on the editorial board of this hallowed journal, so we both have had a lot of experience adding and subtracting commas (and other punctuation marks as well)! And if we cannot figure it out, we do know some unsuspecting souls on whom we can pawn off any reasonable comma crisis!

Your ideas might be on the cutting edge of Anatomy/Physiology—ideas so new they are not mentioned (or barely mentioned) in our current textbooks. These ideas may have a place in your classroom. For example, from Rich’s school we had the idea (explained below) for a discussion panel dealing with the Human Genome Project.

Maybe your idea is quite ordinary. Maybe last night while you were worrying about ipsi-lateral and contra-lateral reflexes, you thought of a brilliant new analogy. You tried it today—and it worked! Share your experience with us! We will even give you credit, if you would like!

Maybe you would just like to tell us about something relevant (even if it is not cutting edge). For instance, below we discuss Relevance Journals as one possibility for “Writing Across the Curriculum.” “Writing Across the Curriculum” is hardly a new concept and yet it has been gaining a great deal of push (and popularity) in recent years. Do you have any “Writing Across the Curriculum” experiences you would like to share with us?

Or, how about that new “buzz word of the day” — ASSESSMENT? What does assessment mean to you? To your administration? To the students? To the parents of the students? What are you assessing anyway? What methods of assessment do/should you use? What is the difference between assessment and grading (assuming there is a difference)? Can projects such as Relevance Journals be used in assessment? If so, how?

**The Challenges We Face with New Discoveries**

With new discoveries we often face the challenge of how to present new ideas to our students. We ourselves sometimes need inspiration from other sources in exactly how to present new information in a way that is both interesting and relevant. Richard’s campus presented a panel discussion about the Human Genome Project soon after its draft map was published. The panel’s discussion was open to the entire community from both on and off campus. The members of the panel were from various departments on campus—a biologist, a sociologist, a psychologist, and a criminal justice expert. The biologist described the science behind the Human Genome Project. With the other panelists, the biologist discussed the psychosocial, ethical, legal, and other issues generated by this new knowledge. A question and answer period followed. Many faculty who attended were able to see outside of their narrow scope and enhance their own knowledge in order to make better presentations to their students.

“Writing Across the Curriculum” and Meaningful Writing in Anatomy and Physiology.

Relevance Journals can be used as a learning tool to enhance a student’s understanding of course information. The journals allow the students to demonstrate their understanding of terminology, theories, and other concepts.

Almost anything learned in your class can become a part of a student’s Relevance Journal.

In our own lives, we have all read about a new car that we wanted to buy and, then suddenly, we kept seeing that car type everywhere. These Relevance Journals allow the students to write about the “ah ha!” in their lives. It may be a topic from another class that they had studied in A & P; it may be a TV show talking...
EDU-Snippets - continued from page 14
about blood typing, a science fiction movie dealing with cloning, a fiction book with forensics they are reading, something in a magazine or newspaper about hormone replacement therapy; or something a friend or relative says. Anything! Someone's brother broke his leg and the student writes about the names of the bones and tells the brother about it using correct scientific terminology. The eighteen-year-old is able to explain to her parents in simple terms the anatomy of the heart so that they may better understand their two-year-old's heart surgery. It may be the genetic engineering of a new drug in the newspaper or on the TV news; the possibilities are endless. It helps to focus their attention on what is going on around them and how the information from A & P can become part of their permanent knowledge. If they use it, they will remember it. This is just one writing exercise. And it works! You might try it. Use it as extra credit or as part of the course grade, your choice.

And Now....

Got the idea? GOOD! Send us your EDU-Snippets and watch them appear here in our new column!

WOULD YOU LIKE $100?

Mary Bracken, Chair Regional Conference Committee
Biology Department
Trinity Valley Community College
1200 East Interstate 20
Terrell, TX 75160
(972) 563-9573
(972) 563-1667 fax
bracken@tvcc.edu

How does FREE membership for one year plus $50 off registration at the next HAPS National Convention sound?
Then consider hosting a regional conference in your area. HAPS will supply the mailing labels along with guidelines you need to put on a one or two-day conference in your area. Consider a Spring 2003 or Fall 2003 date and contact me at the address above, or your regional director. There are a few simple steps to follow to begin this process.

- Contact Mary Bracken for a copy of the guidelines and proposal form.
- Talk to your administration to get their support since they will need to supply a letter of support as part of the proposal. You can get a sample letter from me. Sometimes they will provide other services as well, such as postage, copies, meeting room discounts, meal services, etc. Find out what they will do for you.
- Set a specific date for your one- or two-day conference.
- Contact some colleagues to help you with the conference. These people will be your committee.
- Set up a budget for your estimated expenses. I can send you samples from past conferences. Then set your registration fee on the basis of expected attendees. The idea is to break even, or better still, make money.
- Complete the proposal form. There is one in this journal, or I can send you one.

This should get you started; contact me today (bracken@tvcc.edu) or use the phone number above.
We have some parts of the country considering a regional conference. Toronto, Texas, and Illinois have people who have expressed interest in hosting a regional. If you would like to add your state to this list, contact your regional director or me.

HAPS NEEDS YOU!

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Welcome to the first edition of TechTips, a quarterly “how-to” article that will, I hope, make it easier for you as anatomy and physiology instructors to utilize technology more effectively both in the classroom and in the office. When I first became chair of the technology committee, I thought that it would be helpful to provide HAPS members with information about technology available to instructors. I soon learned that there was a more dire need than simply knowing what software or data acquisition system was available and how to use it. Many HAPS members (and many people in general) have trouble getting the technology to do what they want it to do. The learning curve for many of the tools that we use daily to write (Word, etc.), grade (Excel, etc.), and present material (PowerPoint, etc.) is extremely steep, with no plateau in sight! Therefore, I thought that it would be a good idea to try to provide answers to common problems experienced by HAPS members.

Each issue of TechTips will contain three useful tips for HAPS members. There will be one tip on how to make Microsoft Windows work better for you. I call this the section “Wrestling with Windows” because it explains basic tips on how to regain control of your computer and make Windows work for you, rather than you working “around” Windows. I apologize to all of my Mac friends out there. I believe that the Mac is a much better platform than the PC and that the Mac OS (operating system) is much more user-friendly than Windows. However, at St. Louis College of Pharmacy, the entire campus is Windows-based, with nary a Mac to be found. I, therefore, do not have enough expertise in Mac OS 10 to give advice/tips on how to operate it. Any volunteers? The second section will provide tips on how to make the daily tools that we use for writing and grading (Microsoft Word and Microsoft Excel) easier to understand and use. I call this section “You wanna what?!” The final section will contain a useful tip on how to use technology in either the classroom or lab. I call this section “Technology in the Classroom/Lab.” If anyone has any tips that HAPS members may find useful, or if you have a question, the answer to which would be beneficial to many HAPS members, send them to dford@stlcop.edu.

Wrestling with Windows

Have you ever asked your computer, “Why are you doing this to me?!”... Well, join the club. One simple thing to remember is that the people who design Microsoft Windows understand computers as well as we understand anatomy and physiology (maybe even better). Therefore, the operating system that we call Windows is not designed to make things easy for the novice user; rather it is designed to provide maximum functionality for the technologically advanced user. Thus, many of the annoyances that we see on a daily basis can easily be either turned off or altered if you know how to manipulate the operating system. Take the recycle bin for example. Whenever you delete an item (deleting can be done either by drag-and-drop, right-click and either select delete or press the letter D, or highlight and press the delete key) a window will appear that asks you if you want to delete the item that you just tried to delete. If you click Yes, the item goes to the recycle bin. If you click No, the item remains where it was. Considering that people rarely place an item in the recycle bin that they do not want to delete (and even if they do, you can still remove it from the recycle bin; it does not actually disappear until you empty the recycle bin), this feature seems a bit redundant, eh? So how about turning it off? Simply right-click on the recycle bin and select properties. Here you have a couple of options. Option 1 is to un-check the box marked “Display delete confirmation dialog.” press the Apply button at the bottom, then press the OK button. Now you may delete files without that annoying pop-up dialog box. Option 2 is for advanced users only! Right-click on the recycle bin, select properties, check the box labeled “Remove files immediately when deleted” (this will bypass the recycle bin and simply delete the item when you request it) and then un-check the “Display delete confirmation dialog,” press Apply, and then press OK. Now every time that you delete an item it is truly deleted and not just sent to the recycle bin.

Bonus Tip: Did you know that the Windows Calculator also does scientific calculations? Go to the Start menu, left-click, select Programs, select Accessories, and then select Calculator. You should see a calculator appear that is capable of doing the four basic mathematical operations plus square roots and inverses. To turn this into a scientific calculator, simply go to the view menu.
below the title bar and select Scientific. Voila! You now have a scientific calculator on your desktop or laptop. You may either use the mouse to press the buttons on your screen or use the buttons on your keyboard to perform calculations. Note: in order to use the number pad on the right of your keyboard, the Num-Lock key must be depressed so that the Num-Lock light is on.

For those of you who use the calculator often, go to the Start menu, select Programs, select Accessories, and then Right-click on Calculator. From here you can select Create Shortcut. A shortcut will then appear in the accessories folder. Right-click on the shortcut and select Cut. You may then place a shortcut to the Calculator either on your toolbar or desktop. When you need to use the Calculator, just click the shortcut icon rather than navigating through the Start menu. If you want a calculator in Microsoft Excel, just go to http://www.techtv.com/screensavers/answers/tips/story/0,24330,3331214,00.html for an explanation of how to add a calculator icon to your Excel toolbar so that you can open the calculator from the toolbar in Microsoft Excel.

You Wanna What?!

So you wanna create a document using Microsoft Word and not have to worry about the automatic formatting that the program does for you (and without even asking first... how rude!). So there you are typing along and all of the sudden, BAM! Microsoft Word reformats whatever you just typed. Do you not just hate it when that happens? Try this simple fix and your frustration level is sure to decrease. Press the Tools menu below the title bar and select Auto Correct. You can use the options in the four tabs that you see to customize Word so that it will only do what you tell it to (as far as the Auto Correct functions are concerned). Go to the Auto Format tab and un-check the items that you do not want Word to do for you. If you select the Auto Format as you Type tab, you can disable two of the most annoying features in Microsoft Word. Un-check the boxes labeled Automatic bulleted lists and Automated numbered lists. This will disable that annoying function built into this program that automatically begins either a numbered or bulleted list whenever you place a number or a bullet before a sentence. Now you can type away happily, secure in the knowledge that you now control more of the document that you are typing than ever before. It feels good to get some control back from Microsoft.

Technology in the Classroom/Lab

Currently St. Louis College of Pharmacy (STLCOP) is moving towards having the entire campus hooked up via a wireless network. Each incoming freshman is given a leased (the leasing fee is built into the tuition) laptop computer. These computers are capable of accessing the STLCOP network if they are in range of a wireless transmission “hub.” Hubs are being installed in all of the classrooms, labs, and study areas on campus in order to provide students with access to the both intranet (STLCOP network) and the internet (World Wide Web). You are probably asking yourself right now, “What does this have to do with HAPS?” Well, since almost all of the institutions in which you are teaching have either already considered or will consider doing the same thing, it is not only imperative that we learn to use technology in the classroom, but that we also know how to decide when technology should be used in the classroom. The latter is a topic that cannot be covered in such a short space, so I will leave it to you to ruminate on your own and simply I will stick to the former.

With students coming to class in possession of laptop computers, the classroom environment is going to change. Students are going to be able to take notes on their computers, record lectures onto their computers for later playback, do problem solving exercises, download materials placed in a course folder by the instructor, download and view PowerPoint presentations that the instructor has prepared, listen to audio clips, watch video, etc. In the world of anatomy and physiology, students will be able to research problems in class, view videos of various regions of the human body, listen to short presentations given by research scientists who specialize in a particular area of anatomy and physiology, etc. This means that students will be able to read a problem or problem set, search for relevant materials utilizing the internet, and write an answer all within the span of one 50 minute class session. To this end, this first tip on technology in the classroom focuses on the use of computers in the classroom.

While writing out the answer to a particularly vexing problem, young Jamie just cannot seem to remember what “distal” means. So, she raises her hand and, when the instructor approaches, asks him/her what distal means. The instructor then answers Jamie’s question and life goes on. This situation may take a few seconds (if the instructor is not busy answering some other student’s question) or a few minutes (in a classroom of >30 students and only one instructor, questions do not get answered very rapidly).

Assume that Jamie is in a “smart” classroom with wireless Internet access and her own laptop computer. As she is writing her answer, she cannot remember what “distal” means. She clicks the links button on her Internet browser toolbar and selects the Merriam Webster dictionary website. A display field opens and she types the word d-i-s-t-a-l. Bada-bing, Bada-boom! Within seconds Jamie sees a new browser window displaying the following:

Main Entry: dis•tal – [click to hear pronunciation]

Pronunciation: 'dis-tal"

Function: adjective

Etymology: distant + -al

Date: 1808

1: situated away from the point of attachment or origin or a central point especially of the body — compare PROXIMAL [hot word]

2: of, relating to, or being the surface of a tooth that is next to the tooth behind it or that is farthest from the middle of the front of the jaw — compare MESIAL [hot word]

dis•tal•ly – A-tal-E/ adverb [click to hear pronunciation]

Problem solved. To add the Merriam Webster dictionary to your Internet browser toolbar, just go to the following link: http://www.m-w.com/promos/button/button.htm

While typing her answer(s) to the problem/problem set, it occurs to Jamie that there must be an easier way to do formatting, margins, etc. So, she simply goes to the Tools pull-down menu, selects Macro and Macros. In the space that says Macros in: she selects Word Commands. In the Macro name box, she types the letter “L,” and then selects ListCommands from the menu displayed. After pressing Run, a dialog box is displayed and she
Take your students “above and beyond” the traditional anatomy & physiology text with Anatomy & Physiology, Sixth Edition, by Seeley/Stephens/Tate! Designed for the two-semester A & P course, Anatomy & Physiology emphasizes the relationship between structure and function. Students learn about anatomy and physiology while developing crucial problem-solving and critical thinking skills.

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Hooray for HAPS!

As a “first timer” to the annual HAPS meeting, I was delighted to find a group of talented, interesting, and friendly colleagues. I was fortunate enough to receive the Robert Anthony Scholarship, which provided me with some financial support to attend the meeting in Phoenix.

Thank goodness the conference coordinators provided us with tablets of paper—I believe I used all of mine taking copious notes during the update seminars and workshops! The program was informative AND interesting, often a rare combination at conferences. After my first full year of teaching, I have to admit that I was quite exhausted, but, after attending the HAPS conference, I actually found that I could not wait for the fall semester to start so I could try out all of the techniques I had learned at the meeting!

The membership of this society is warm and welcoming. I never felt like an outsider, nor did I feel like I was alone at the meeting. I enjoyed the Rawhide social and the banquet. This is a meeting that I see myself returning to year after year.

The Robert Anthony Scholarship is a wonderful resource of this society and a great way to recruit new members. I am definitely hooked, and I look forward to welcoming all of you to my state of Pennsylvania for next year’s HAPS meeting. See you in Phillie!

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My primary teaching goal has always been to help my students understand newly acquired information. Achieving this goal requires not only a careful selection of content and activities, but also a delivery method through which that content can become meaningful. The 2002 Human Anatomy and Physiology Society Conference in Phoenix, Arizona, exposed me to a variety of teaching approaches and has supplied me with a wealth of new ideas. Some of these ideas I incorporated into my lesson plans for the summer 2002 session, while others will be implemented in subsequent sessions. In my Human Anatomy and Physiology classes, a major emphasis is on appreciating the relationship between information, technology, and problem solving.

In Biology, as in many of the sciences, the concepts that we teach are difficult to comprehend. Students tend to be more responsive if they perceive that they are an integral part of the learning process. In several of the workshops I attended, I was supplied with the tools to use information, technology, and problem solving to empower my students in the classroom.

My senior colleague, Felix Akoje introduced me to HAPS about a year ago. He told me that HAPS is a family that values its members. This turned out to be an understatement. I felt welcomed, appreciated, and fully a part of the conference. I have never attended a weekend conference, so I thought there would be lots of “dead” time. The HAPS conference was full, engaging, interesting, educational, and above all fun. I have not had so much fun as I did in Arizona in a long time.

Teaching comes down to our commitment to our students. I want all my students to be able to organize, analyze, and evaluate information in a way that is maximally productive in their personal as well as professional lives. Attending conferences and workshops regularly leads to discovering new ways of helping our students succeed. This process invariably leads to ways of improving my teaching. All I can say is keep up the superb work, HAPS. Thank you HAPS for making this experience possible for me through the Robert Anthony Scholarship.

Information About The Robert Anthony Scholarship
for new instructors in anatomy and physiology

Purpose: To encourage instructors during their first three years of teaching anatomy and physiology to network with seasoned colleagues by attending the Human Anatomy and Physiology Society Annual Conference.
Award: Covers registration fee and cost of the banquet at the annual conference.

Criteria:
1. must be a HAPS member in good standing
2. must be a full-time faculty member
3. must verify their status by having a letter from the Department Chair or Dean stating that the applicant is full-time and in their first three years of teaching anatomy and/or physiology (same deadline as application)
4. have a teaching load that includes at least one section of Human Anatomy and Physiology
5. must fill out an application and submit with all supporting materials by December 31, 2002

The 2003 Call for Proposal and Application forms are available on the HAPS web site at (wwwhapsweb.org)

Any questions regarding grants and scholarships contact
2003 Grants and Scholarship Committee
Richard Faircloth, Chair
Department of Biology
Anne Arundel Community College
101 College Parkway
Arnold, MD 21012-1895
(410) 777-2272
(410) 548-0306 fax
RFaircloth@aacc.edu

HAPS Regional Conference Report

Mary Bracken, Chair
Trinity Valley Community College
PO Box 668
Terrell, TX 75160
(972) 563-9573
(972) 563-1667 fax
bracken@tvcc.edu

The workshop session at the annual conference in Phoenix for people interested in regional conferences was well attended. People were there from Minnesota, British Columbia, California, Ontario, Maryland, and Illinois. Each expressed interest in hosting a conference. They are going to meet with their administration and other colleagues to see what they can do.

Check out the HAPS website (wwwhapsweb.org) for dates on upcoming regionals. So far there is one scheduled for March 2003 at the University of Illinois at Chicago, and for October 2003 at Humber college in Ontario, Canada. By the time you read this, the regional at Anne Arundel Community College will have taken place in October 2002.

There is a short article on page 15 with details about what a potential host needs to do. Will you consider hosting a regional in your area? Contact me for more information. People in your area will thank you for providing them with valuable information and networking opportunities.
The purpose of this workshop was to demonstrate the interactive tutorial of the human muscular system, which Jeanne Vilberg of Clarion University and I developed. Most of my students are in allied health programs; thus, they need to know human muscles. However, in Penn State’s Anatomy Labs, the cat alone is used for dissection purposes.

In the past, I would start each lab session on the muscular system by teaching a group of human muscles, using the text, charts, and models. The class would then dissect out similar muscles in the cat. Several years ago I began to question my objectives when I found myself saying that human muscles were my primary concern, and yet I was spending 2/3 of each lab period teaching cat muscles. Further, most of the dissection time was being spent removing fascia from cat muscles and then separating those muscles. Having accomplished the dissection, the students would then memorize the cat muscles without making any correlation to the human muscles they had just learned. In theory, we were using the cat to help students learn human muscles, but there was actually little or no carryover occurring.

The above problems, coupled with requests from the Physical Therapy Assistant Program Director that we cover even more human muscles, led to the development of this tutorial. In producing the tutorial, I selected pictures of individual human muscles from the ADAM Standard Program and then added appropriate text, including origin, insertion, and action of each muscle. Jeanne Vilberg and I then developed numerous self-tests, such as one in which the students move colored indicators to the appropriate position to represent the origin and insertion of a given muscle. Other self-tests require the student to type in the origin, insertion, and action of a muscle, thus forcing the student to learn to spell the terms correctly. A third type of self test is one in which students name isolated muscles on a skeleton and/or move muscles onto a skeleton and position them properly. Immediate feedback is given for each test.

During the seminar, participants had the opportunity to use the program and to make suggestions for future additions. Participants were also shown feedback and test results from students who had used the program. By incorporating this program into my labs, students are able to spend more time on human muscles. I now start each lab by presenting human muscles, as I did in the past, but then we move on to the computers to reinforce the learning of those muscles. Finally, the students return to the lab where they find the cats lying out on “silver platters,” if you will, already dissected by lab assistants. The students are then asked to locate the same muscles they have just learned, or variations of the above, on the cat. Students still get to view and touch actual muscle tissue, but now they are spending 1/3 of their lab time studying human muscles and only 1/3 of the allotted lab time on the cat. (Students are still required to do their own dissections for the rest of the systems, thereby fulfilling the dissection requirement for the course.)

The students have enjoyed the computer program and have voluntarily come in to study on their own time. They especially like the immediate feedback of the self-tests. The scores on the muscle lab practical, including the scores for questions on cat muscles, have improved since the incorporation of the computer program into the course. This program can be used independently, or it can be used in conjunction with cat or cadaver dissection.

The long-dead bones of a human skeleton can reveal much about the owner’s age, sex, and stature. In Valerie O’Loughlin’s hands-on session, participants (working in groups of four to six) used detailed instructions to sleuth through specific skeletal clues. The bony specimens on each table included two skulls and an os coxa.

Participants learned that the pelvis is normally the most reliable indicator of sex. The skull is second. The members of each group used tables and charts to determine the male and female characteristics of the bones in front of them. Many were
surprised to learn that bones can have a combination of male and female features! The presenter and the participants engaged in a lively discussion about other features that could be used to determine sex and how instructors could incorporate this exercise in their own A&P labs.

Using the skulls and the os coxa in front of them, participants also worked through several methods of determining age at death. They learned that some age-determining methods are useful only for certain populations (e.g., juveniles), and some methods tend to be more accurate overall than most. All participants were able to determine the skull's age using ectocranial suture closure criteria.

Within the last few minutes of the session, a brief discussion ensued on how to determine the stature of a skeleton (using long bone measurements).

Participants further learned that determining the age and sex of a skeleton is an art, not unlike the art of reading an EKG. Time and practice are needed to see the subtle clues each bone manifests.

Time constraints precluded a discussion about the pathologies evident in the skeleton. (**Perhaps this should be the focus of a 2003 HAPS workshop. Anyone interested?**) Each participant received a brief annotated bibliography of references and all were encouraged to use these techniques in their classrooms. Anyone who would like a copy of Valerie's handouts may contact her at the above address.

---

**Summary of Workshop 106**

**Evaluating and Improving Student Performance**

*Michael E. McLean, Presenter*

Executive Editor, Testing and Assessment
McGraw-Hill Higher Education
(630) 789-5219 (voice)
(630) 789-5442 (fax)
michael.mclean@mcgraw-hill.com

HAPS workshops are an excellent way to introduce busy faculty to new software tools developed by book publishers or other companies. GradeSummit is a web-based service of McGraw-Hill that is not limited to users of McGraw-Hill textbooks. There are text-specific versions for the market-leading textbooks, but a text-neutral version is also available. The workshop presenter showed how to "Help your students optimize their study time and improve grades using this diagnostic self-assessment and exam preparation tool." This was not designed to be an online testing tool, but rather a self-testing tool that students can use for self-study before an exam. The software developers found that students who access textbook web sites go straight to the quizzing and review sections. So with this quizzing tool, students can target for further study the areas in which they are weakest. Instructors can access the same diagnostic information available to the students, use it to tailor homework assignments and extra credit, or to modify lecture material. This is a non-threatening way to find out what your students know before the exam. Different involvement levels are available to the instructor, from tracking class strengths and weaknesses, to tailoring lectures or review sessions, all the way to making GradeSummit an integral part of their graded homework assignments. The self-assessment tool costs about $8 when bundled with McGraw-Hill textbooks; or tools to accompany other textbooks may be purchased on the web for about $20.

---

**Summary of Workshop 808**

**A “How To” Guide for Developing a Publishable Scholarship of Teaching Project**

*Valerie Dean O'Loughlin, Ph.D., Presenter*

Assistant Professor of Anatomy
Jordan Hall 104
Medical Sciences
Indiana University
Bloomington, IN 47405
(812) 855-7723
vdean@indiana.edu

In this workshop, Valerie O'Loughlin provided a step-by-step guide for using the instructor's own classroom for pedagogical research. Participants worked in small groups as they focused on the first step, developing a clear research hypothesis, which was then critiqued by the group.

Next Valerie discussed how to review the background literature, and provided a list of journals that have published teaching projects using A&P scholarship. Then, each group discussed methods of assessment that would be useful in answering the original research hypothesis.

Valerie provided information about obtaining "Human Subjects" approval for educational research—and, yes, it is necessary to get approval for educational research! Workshop
participants determined a beginning point for researching and collecting data. The groups then worked to determine how to analyze these data.

Valerie encouraged the individuals to perform their research back at their home institutions and to follow through with the next step, presenting their findings to their colleagues. She suggested further that individuals consider presenting their research results at the 2003 HAPS Conference. After the presentations, a venue (perhaps from the list of journals provided) could be found in which to publish the results. Since the HAPS 2002 Conference, Valerie has been e-mailing workshop participants and encouraging them to begin their own scholarly research projects.

**Summary of Workshop 209**

*Innovations in Anatomical Preparations Used in the Training of Allied Health Professionals*

**Grant Dahmer, Presenter**

P.O. Box 64449  
Tuscon, AZ 85728  
(520) 529-2776 phone/fax

**Paul Krieger, Summarizer**

Grand Rapids Community College  
143 Bostwick Ave. NE  
Grand Rapids, MI 49503  
(616) 234-4250  
(616) 234-3592 fax  
pkrieger@grcc.cc.mi.us

This workshop was a hands-on session that used Phil Tate's state-of-the-art cadaver lab to showcase Grant Dahmer's wonderful talents for embalming and preserving cadavers. Participants immediately donned gloves and examined several specimens. All were impressed by how fresh the tissues appeared and by the lack of any noticeable odor. Grant intubated one of the torsos and inflated the lungs to demonstrate the flexibility of the preserved specimens. A discussion soon ensued about Grant's preservation techniques. He credited his success to a number of factors, such as embalming technique, and to his specially formulated embalming fluids and wetting solutions.

The musculature on one two-year old torso still had a fresh, bright pink coloration. Participants also examined a nine-year old specimen that was in remarkably good shape. Grant assured everyone that he had embalmed bodies all over the world, some of which are now 20 or 30 years old and still looking great.

Phil Tate's lab was a pleasure to behold. It featured an elevated observation deck, down draft ventilation system, and a video camera projection system. The video camera was mounted along a movable track on the ceiling. Two monitors were also suspended from the ceiling making it easy to demonstrate a special dissection or clinical technique to a large group of students.

Grant wears many hats. He was one of our vendors at HAPS as the president of BioPolymers, Inc. He makes his own embalming fluids and sells them through his company. In addition, he is director of a willed body program. Finally, he also teaches advanced anatomy labs. If anyone is interested in any of his products or techniques, Grant can be reached by phone, fax, or snail mail. Sorry, he has strong reservations about the internet, so he does not have e-mail.

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*Baseball in Phoenix, a Perrotti legacy!*
Phoenix College, our workshop host

Shake, Rattle and Roll
Phil Tate, Conference Coordinator and President-Elect, presents Bill Perrotti with a “rattle.”

Phil Tate with Lakshmi Atchison, Conference Coordinators 2002 and 2003.

Rich Faircloth at the Grand Canyon recruiting participants for the Grants and Scholarships Program.
Joan Barber, Deb Wiepz, and Donna White, all smiles at the banquet.

Passing the Gavel
Bill Perrotti assumes the role of Past-President as Mike Glasgow assumes the role of President

HAPSters in Sedona at the Red Cliffs

Please send 1-5 of your favorite shots of Phoenix/Grand Canyon to be used on the story board of the 16th Annual National HAPS Convention which will be displayed in Philadelphia at the 17th Convention to Richard Faircloth, Anne Arundel Community College, DRGN-246, Arnold, MD 21012.
## HAPS 2003 Workshop Information

<table>
<thead>
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<th>Last Name</th>
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### Type of workshop:
- Lecture presentation
- Technology demonstration
- Other demonstration
- Lab demonstration
- Technology hands-on activity
- Other hands-on activity
- Lab hands-on activity
- Overhead projector
- LCD projector
- 35 mm slide projector
- Tables
- VCR

### Equipment needs:

### Computer for presentation:
- Mac
- PC
- Modern
- Internet access
- CD-ROM
- DVD

### Software:
- Yes
- No
  - Must load application program on instructors (demonstrator's) computer.
- Yes
- No
  - Must load application program on all workshop participant's computers.

If the answer to either question is yes, you will be contacted for specifics.

### Workshop Specifications:
- Yes
- No
  - Limited number of participants? If yes, the number of participants __________
- Yes
- No
  - Would you be willing to repeat this session?

---

## HAPS 2003 Call for Workshop Proposals

**Deadline for Submission:** December 13, 2002

Name and title of presenters and abstract as they will appear in the conference program:

- Presenter
- Co-Presenter(s)

Workshop title

Workshop abstract (1 paragraph) to appear in conference program:
HAPS 2003 Call for Poster Session Proposals

Deadline for Submission: December 13, 2002

Presenter ____________________________

Co-Presenter(s) ____________________________

Institution ____________________________

Department or Division ____________________________

Street Address ____________________________

City/State/Prov. ____________________________ Postal code ____________________________

Country ____________________________ Phone ____________________________

Email ____________________________ Fax ____________________________

Poster session title: ____________________________

Poster session abstract (1 paragraph) to appear in the conference program:

Please return the poster session information forms to:
Carl Shuster, Madison Area Technical College, Biology Department, 3550 Anderson St., Madison, WI 53704
For additional information: Phone: (608) 246-6203, Fax: (608) 246-6880
Email: CShuster@matemadison.edu
The following committee chairs invite input from HAPS members and willingly provide information on the activities of their committees.

**ANNUAL CONFERENCE COMMITTEE**

Henry Rursch, Chair  
School of Health Sciences  
Humber College  
205 Humber College Boulevard  
Toronto, Ontario M9W 5L7  
(416) 675-9955 X4641  
(416) 675-2015 fax  
rusch@admin.humber.on.ca

The primary responsibilities of this committee are development of a standardized fee structure for the annual conference, formulation of guidelines and assistance for the conference coordinator, and generation of a calendar of conference sites.

**CORE CURRICULUM AND ASSESSMENT COMMITTEE**

Murray Jensen, Co-Chair  
General College  
University of Minnesota  
128 Pleasant Street SE  
Minneapolis, MN 55455  
(612) 625-0093  
(612) 626-7848 fax  
jensen005@maroon.umn.edu

Charles Wett, Co-Chair  
4647 Shortridge St. S.E.  
Albany, MN 56001-6022  
(507) 924-9374  
cwett@proaxix.com

This committee has developed a second, revised edition of the HAPS "Human Anatomy and Physiology Course Guidelines." The second edition includes new guidelines relating specifically to the laboratory component of the course.

**GRANTS AND SCHOLARSHIPS COMMITTEE**

Richard Faircloth, Chair  
Department of Biology  
Anne Arundel Community College  
101 College Parkway  
Arnold, MD 21012-1895  
(410) 777-2272  
(410) 548-0306 fax  
rfaircloth@aa.edu

This committee is responsible for reviewing all grant and scholarship proposals, selecting proposals to receive funding, and submitting its recommendations to the Board of Directors for approval.

**MEMBERSHIP DEVELOPMENT COMMITTEE**

Donna White, Chair  
Math and Natural Science  
Colin Community College  
2800 E. Spring Creek Parkway  
Plano, TX 75074  
(972) 881-5889  
(214) 255-1279 fax  
dwhite@cccd.edu

Committee members assist the Chair with recruiting members and compiling membership information.

**NOMINATING COMMITTEE**

Philip Tate  
Department of Biology  
Phoenix College  
1202 W. Thomas Road  
Phoenix, AZ 85013  
(602) 285-7105  
(602) 285-7528 fax  
phill.tate@pcmail.maricopa.edu

The committee chair is always the current President-Elect. The committee is responsible for recruiting nominees for the elected offices and appointed positions of the HAPS organization.

**PRESIDENTS EMERITI ADVISORY BOARD**

William Perrotti (Past-President)  
Liaison  
Life Science Department  
Mowhawk Valley Community College  
1101 Sherman Drive  
Utica, NY 13501  
(315) 792-5519  
(330) 792-5556 fax  
wperrtiti@mvaac.edu

This is an experienced advisory group that includes all who have served as Past President of HAPS. It provides advice as requested by, and adds a sense of HAPS history to the deliberations of the Board of Directors.

**PUBLICATIONS BOARD**

Colin Wheatley, Chair  
Nutrition & Physiology  
McGraw-Hill Publishing  
1222 Sausalusa Road  
Madison, WI 53711  
(608) 277-7319  
(608) 277-7351  
colin_wheatley@mcgraw-hill.com

**EDUCATORS ADVISORY PANEL**

Sue Bailey, Chair  
College of Arts and Sciences  
Troy State University Montgomery  
231 Montgomery Street  
Montgomery, AL 36104  
(334) 241-5473  
(334) 241-8651 fax  
sbailey@tsu.edu

Members of the HAPS-Educator Advisory Panel provide advisory and support services to the HAPS-Educator editor such as soliciting and reviewing articles, and proofreading the final draft of the HAPS-Educator before it goes to press.

**EDITORS:**

HAPS-Educator  
See information above

HAPS Web Page

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(612) 626-7848 fax  
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Madison Area Technical College  
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Madison, WI 53704  
(608) 246-6203  
(608) 246-6880 fax  
cshuster@macmadison.edu

**REGIONAL CONFERENCE COMMITTEE**

Mary Bracken, Chair  
Biology Department  
Trinity Valley Community College  
1200 East Interstate 20  
Terrell, TX 75160  
(972) 563-9573  
(972) 563-1667 fax  
bracken@tvcc.edu

The committee provides mentoring assistance to coordinators of regional conferences. Anyone interested in hosting a regional conference should contact the Chair.

**AD HOC COMMITTEES**

**ANIMAL USE COMMITTEE**

John Waters, Chair  
Biology Department  
Penn State  
413 Mueller Laboratory  
University Park, PA 16802  
(814) 865-1154  
(814) 865-0131 fax  
jrw8@psu.edu

A three-year plan includes widely distributing the HAPS policy statement, developing animal use internet links on the HAPS Home Page, monitoring relevant legislation, and creating a resource packet for HAPS members. Questions and suggestions from members are welcome.

**CADAVER USE COMMITTEE**

Christine Ilii, Chair  
Department of Biology/Natural Science & Communication  
Salt Lake Community College  
Salt Lake City, UT 84130-6008  
(801) 957-4640  
(801) 957-4821 fax  
Christine.Ilii@slcc.edu

The goal of this committee is to develop guidelines for use of cadavers in anatomy and physiology instruction.

**SAFETY COMMITTEE**

Karen McMahen, Chair  
Biological Science  
University of Tulsa  
603 S. College Ave.  
Tulsa, OK 74104  
(918) 631-3129  
(918) 631-2762 fax  
karen-mcmahon@utulsa.edu

The Safety Committee is developing standards for safety in the laboratory.

**TECHNOLOGY COMMITTEE**

Dayton Ford, Chair  
Biology/Pharmaceutical Sciences  
St. Louis College of Pharmacy  
4588 Parkway Place  
St. Louis, MO 63110  
(314) 367-3700 X807

The committee monitors and reports on technological changes influencing anatomy and physiology teaching, such as advances in instructional software and data acquisition equipment.

**TESTING COMMITTEE**

Janis Thompson  
Math and Science  
Lorain County Community College  
1005 North Abbe Road  
Elyria, OH 44035  
(440) 366-7245  
(440) 366-3432 fax  
jthompos@lorainccc.edu

This committee recently completed, tested, and approved the HAPS Standardized Test for Human Anatomy and Physiology. Any HAPS member may obtain a copy of the test by writing to the Chair.

**CONFERENCE COORDINATORS**

2003 in Philadelphia, PA  
Lakshmi Atchison  
Department of Biology & Molecular Biology & Environmental Sciences  
Chesnut Hill College  
9601 Germantown Avenue  
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(215) 248-7159  
(215) 248-7155 fax  
latchiso@chc.edu

2004 in Calgary, Alberta, Canada  
Izak Paul  
Department of Biological Sciences  
Mount Royal College  
4825 Richard Road SW  
Calgary, Alberta T2E 6K5  
Canada  
(403) 240-6173  
(403) 240-6095  
ipaul@mtnroyal.ca
HAPS gratefully acknowledges the corporate, professional society, and institutional participation in and support for the 2002 Conference.

<table>
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HAPS would also like to thank Benjamin/Cummings, John Wiley & Sons, and McGraw-Hill for their assistance in promoting the Conference and recruiting new members. These companies sent a HAPS “public service” announcement to everyone on their A&P mailing lists.
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