HAPS News

May 1993

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HAPS News is the official newsletter of the Human Anatomy and Physiology Society (HAPS) and is published quarterly. 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.

Membership has increased steadily since the formation of HAPS in 1989, and there are presently over 700 members from across the United States and Canada. Annual membership dues are $20 for an individual membership and $100 for a corporate membership. HAPS welcomes both individual and corporate membership applications and inquiries.

New: HAPS Hotline: (800) 448-HAPS(4277). Information on membership, meetings and more!

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Papers for publication, requests for information, positions available and wanted, and letters to the editor are welcomed. Send a double-spaced typed or printed copy together with your name, position, address, phone number, and institutional affiliation to the editor.

HAPS News is created in Aldus Pagemaker 4.0 on a Macintosh Classic computer. Files can be imported into PageMaker from Microsoft Word or MacWrite word processing programs. Your editor greatly appreciates receiving files on 3.5" double density disks. Please include a hard copy, just in case the disk is damaged enroute or during transfer. Upon request, disks will be returned to each author after publication of the information. Please identify your software and hardware when submitting information on computer disks.

DEADLINE FOR SUBMITTING MATERIAL TO HAPS News: June 10 (August issue).

Cover design and illustrations by Tobye Rae Nelson of Nelson Graphics.
To celebrate the beginning of Spring Break (March 13), my husband and I rented one of our favorite movies. The movie (Circle of Iron starring David Carradine) is based on a quest undertaken by a man named Cord who is seeking "the book of wisdom." David Carradine plays several roles in the movie and in one of those roles as the blind teacher, he makes the following comment to Cord: "A man (or a woman) cannot step twice in the same river." Such a deceptively simple statement since it is obvious (but only if you really think about it) that the river changes moment by moment as it is reshaped and reformed by the forces that act upon it.

My immediate response to that bit of wisdom was to see its application to my role as a teacher. Through our interactions in the classroom, both the students and I end the semester irreversibly changed, and together we have set into motion ripples that expand far into the future with unimaginable results.

An excellent teacher, by my definition, is simply a person who rejoices in the search (the quest) for knowledge and willingly and joyfully encourages those characteristics in her/his students. Unfortunately, in today's fast-paced world emphasis is placed on doing it perfectly the first time—failure is not permitted and on the drive to acquire material things. Instilling and encouraging the concept of learning as a quest is often neglected. Students, all too frequently, want to be told exactly what they have to know to get that "A" which will ensure their acceptance into physical therapy or medical school or occupational therapy or nursing, and teachers and administrators far too often measure teaching ability by the numbers on the yearly evaluation forms.

Given a teacher's impact on the world, I'm sure each of us is continually on a quest for new ideas and techniques. To help you with your quest, you'll find in this issue some terrific teaching tips and ideas submitted by Susan Van Loon, John Stencil, David Parker and Robert Smoes. I especially like Susan Van Loon's fun and games approach.

I hope to meet many of this past year's contributors at the HAPS Conference in Beaumont, TX in May, and no! Beaumont is not close to Denton. I'm in the northeastern part of the state while Wayne Carley is in the southeastern part of the state, some 350 miles away. Hey, ya'll, Texas is BIG!!!

Keep all those wonderful teaching tips and articles coming in and remember that we have an August issue (June 10 deadline) coming very, very soon.

Theresa Page
Texas Woman's University
Denton, TX 76204

HAPS ELECTRONIC BULLETIN BOARD SYSTEM

The following information has been provided by Millie Galliher, Chair of the Bulletin Board System committee for anyone interested in accessing the HAPS electronic bulletin board:
Phone Number: (602) 432-7854
Hours: Monday-Thursday (nights) 7:00pm until 6:00am (Mountain Standard Time)
Modem Settings: 300-1200-2400 Baud, 8 data bits, no parity check, 1 stop bit (8-N-1), full duplex. You may have to increase your "wait to connect" time to 40 seconds or more, depending on your phone service.

If you have trouble connecting to the system, call (602) 432-5087 by voice for assistance. Millie is usually available during the above times, but an answering machine will take your messages when she is not in her office.

When you first sign on to the system, you will be asked to fill out a questionnaire. As you complete the questionnaire, your security level will be set automatically which means that you will have access to various information based on your security level. But remember that the bulletin board is open to anyone, not just HAPS members.

Frederic Martini's
FUNDAMENTALS OF ANATOMY AND PHYSIOLOGY
SECOND EDITION

The Exploration of the Human Body...

"Martini eases the student into the material in a more comprehensible manner, where [our text] leaves you feeling bombarded."
Mary Couadin, student-Dutchess Community College

"Martini writes on a more personal level and is easier to understand [than our text]."
Susan Piccisilli, student-Middle Georgia College

...Chosen by the Student Body.

HAPS News May 1993 page 3
Greetings From Our President

Tuesday evenings I pull the A&P night shift. Nights at Madison Area Technical College are much less hectic than days, and there aren’t many students or faculty around past 5 pm. Last Tuesday I was surprised to see one of our chemistry instructors, David B. Shaw (D.B.), gathering some materials in one of the chemistry labs. Since D.B. is a ‘day timer’ and not generally known to frequent the building after sundown, I had to satisfy my curiosity and give him a hard time about the late hours.

David was busy preparing materials for a chemistry workshop at one of the local middle schools. He has been active for many years in the American Chemical Society and in a summer chemistry education program for middle and high school students offered through the University of Wisconsin in Madison. He has also worked with Bassam Shakashiri (University of Wisconsin and the National Science Foundation) on educational chemistry. As an offshoot of those activities, he is currently involved in providing evening demonstrations and workshops for area public school students. That particular evening was one such event, and he was busy assembling his ‘bag of tricks’.

Hearing David explain what he was doing, brought to mind some of the statements made last June at the HAPS conference in San Diego by Paul Saltman. Saltman, in a very dynamic presentation, lamented the dwindling lack of interest in the sciences as students progress from elementary school through high school and into college. This dwindling interest bodes ill for developing a ‘scientifically literate’ public that can make intelligent, informed decisions on the complex issues of science and technology that face modern society. Saltman’s suggested approach was to focus on improving the science at the elementary level where children still are interested in science. He strongly recommends working with elementary school teachers to help them become more confident and competent in the sciences so the overall quality of science education will improve. D.B.‘s program is student-focused rather than teacher-focused, but the basic goal is the same.

Since it had been a good day, and I hadn’t yet used my thought processes long enough to make my head hurt, I began thinking about how teachers of human anatomy and physiology could reach out in a similar way. I recalled visiting my son’s sixth grade science class last December. They were studying the human body, and I offered to bring in a fresh lung-trachea-larynx pluck. Of all the organs I think the lungs must be seen while fresh to truly appreciate their unique qualities. I was equally sure that the fresh tissue would provide a suitable level of grossness for sixth graders. The students and I probed, probed, cut, inflated, and talked for 45 minutes. We attracted so much attention that I ended up doing an encore performance with three other sixth grade science classes. The students were very interested and observant; qualities that were readily apparent from the questions they asked. I did this as a one-shot thing, but I’m seriously considering expanding this technique as a means of promoting interest in anatomy and physiology at the elementary school level. Maybe this is an area that HAPS should explore. If any of you have done this type of thing, I’d love to hear about it. I’d be particularly interested in other ideas for presentations or workshops geared toward elementary or middle school age children. I’ll need another project quite soon since this is my last column as HAPS President. Come June, I wouldn’t want to be burdened with any free time!

Speaking of projects, you should have received your copy of the HAPS Core Curriculum document. We hope you find it useful. I would like to once again thank Vic Johnson and his committee for a job well done. Another more lengthy document, the HAPS Conference Manual, is nearing completion. This is a project that I have been working on for the past two years with the assistance of all the former HAPS Conference Directors. This manual will have all the ins and outs of hosting a conference. We hope this manual will help familiarize future members, who are considering volunteering to serve as conference directors, with the process and provide ideas and guidelines. The finished document should be available for the May, 1993 conference. By the way, the Executive Committee is on the lookout for sites for the 1995 and 1996 conferences and for regional meetings as well.

Serving as HAPS President this past year, has been an enjoyable experience for me, and I plan to remain active in the organization. Participation in HAPS is worth everyone’s consideration. Have an enjoyable and rewarding semester, and I’ll look forward to seeing you at the conference this year.

Gary Johnson, HAPS President
Madison Area Technical College
Madison, WI 53704
HAPS MEMBERS

in the news!

John Stencil, Ph.D., an anatomy and physiology instructor at Olney Central College, recently received a special award from the Illinois Community College Board for outstanding teaching. Cary A. Israel, executive director of Illinois Community College Board, stated, The awards reflect the Board's intense commitment to teaching/learning, and the ultimate winner from the competitive awards program will be Illinois, as the beneficiary of outstanding undergraduate learning." Two other junior colleges received the award: Joliet Junior College for its model two-year physics program and Grayslake, The College of Lake County, for a project which assessed how students learn. The winning programs were all chosen for their uniqueness, creativity and innovation.

CONGRATULATIONS, JOHN!

ATTENTION

ALL HAPS MEMBERS

At the annual business meeting to be held in conjunction with the conference at Beaumont, Texas, the following amendment to the HAPS CONSTITUTION will be presented to the membership:

ARTICLE 2.2--MEMBERSHIP

An individual shall become a member upon payment of a membership fee, and shall remain a member in good standing for a 12 month period. 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.

Currently, the constitution calls for all memberships to be renewed on May 31. The Membership Committee Chair and the Executive Committee feel that the proposed change will make membership renewal more manageable.

** ** HAPS '94 ** **

PORTSMOUTH, NEW HAMPSHIRE

A BRIEF MESSAGE FROM PAM LANGLEY, YOUR 1994 CONFERENCE COORDINATOR

Save June 4-9, 1994, for HAPS '94, to be held at the Sheraton Portsmouth overlooking the waterfront in colonial Portsmouth, New Hampshire. For those of you in New England who have never been to a HAPS Conference because of the travel involved, now is your chance to see what you've been missing! For HAPS members who have never been to New England, what better excuse could you have to make the trip in '94?

Portsmouth's location—on the Atlantic coast about an hour's drive north of Boston—is an attraction in itself. The many academic, industrial, and medical institutions in the area provide a wealth of talent from which we can draw both conference planners and presenters. Likewise, the substantial tourism industry and performing arts community stands ready to fulfill the social needs of the group. Bring the family along for fine dining, theatrical performance, or high-seas adventure!

All aspects of the '94 Conference are in the planning stages at this time. I hope to have more specific program information available at the Beaumont Conference. If you are interested in assisting with the planning of the event, or if you or someone you know would like to be a presenter, please contact Pamela Langley at the New Hampshire Technical Institute, 11 Institute Drive, Concord, NH, 03301-7412 or call (603) 225-1868.
An educational software program I recently bought, called Body Language, is a significant step forward in its field. The computer software I had seen previously had not been all that impressive as an adjunct to student learning. I must admit that I have not seen everything, but what I have seen, with few exceptions, has not been worth considering. Body Language is produced by Hal Peters of Educational Software Products (ESP), 12 Bella Vista Place, Iowa City, IA 52245; Phone (319) 354-3095. The program is available on either Macintosh or PC format. Both formats require VGA monitors and the program is mouse-driven.

Body Language is essentially a computer-based drill program to help students learn the names and locations of over 3000 human anatomical structures. The objectives of the program are to increase the student's speed and accuracy in matching names to structures, when the student is given both a name and various structures in a diagram from which to choose the correct answer. There are recall drills which are designed to improve the student's ability to name and correctly spell (WOW!) anatomical parts when the program points to them. The scope of the program is quite comprehensive, including over 200 anatomical diagrams covering all body systems. The diagrams are adapted mainly from Principles of Anatomy and Physiology, Gerard J. Tortora and Nicholas P. Anagnostakos, 6th ed. Harper-Collins College Publishers.

ESP states in their description of the program that the sequencing of the questions in the drills continually adjusts to each individual student's performance by using a Variable Interval Performance Queuing (VIPQ) technique. With VIPQ, a student having difficulty with particular questions will periodically review these questions at optimally-spaced intervals.

The entire program costs $300 ($600 with site license). I wouldn't be surprised to see it as part of an ancillary package that one receives with the adoption of a new edition of one of the anatomy and physiology textbooks.

Since student access to computers is limited at my institution, I have received very little feedback from students at this point, but what little I've heard sounds promising. The other anatomy and physiology teachers in my department seem to like the program and feel that it should serve as a good reinforcing tool for learning anatomy, providing of course that students are motivated enough to use it.

How one accesses the program is one area that needs improvement. Currently, (in the DOS version) you have to create subdirectories for each disc (17 of them). Since there is no overall menu for the program, you have to exit one subdirectory to get into another if you want to change from one body system file to another. A colleague of mine created a batch file for our use which brings up a menu inside the file you are in which then permits the user to type in a three or four letter code to call up another file, and away you go.

What about student access to computers? Is it a problem for you? If it is, you are not alone! I have spent several months trying to get the aforementioned program into our student computer facility, but without success.

Apart from the fact that only a limited number of the computers had VGA monitors and NONE were mouse-driven (a security problem since our mice walk!), the facility was all booked up. Fortunately, I knew someone in our Math Development Centre who let me put the program on two of his machines for this semester only. I mention this problem as a warning to anyone who is beginning to venture into computer-based learning. Find out where you can put the program for student access and make sure the system can accommodate the program. But most important, get something in writing to ensure that your students will have

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Colleges Biosciences Association 7th Annual Conference June 1-2, 1993 Sheridan College Toronto, Ontario, Canada Teaching Health Sciences in the 1990's

Speakers:
- Mr. Jay Ingram, "How do we talk?" Dr. Nils O. Peterson, "Changin View of the Cell Membrane" Dr. James P. Meschino, "Nutrition, Energy and the Kreb Cycle" Dr. Gary McIsaac, "Transurethral Microwave Thermotherapy" Dr. Frederic Martini, author, "Fundamentals of Anatomy and Physiology," 2nd ed. (Prentice Hall)

PLUS workshops!
Contact: Sandra Boswell, Conf. Chairperson, Sheridan College, (416)845-9430 Ext. 8083.
Wayne Carley
Nominee for President-elect

People: People teaching People about the structure and function of ... People. Other societies are about research or science or teaching, but HAPS is about people working together to improve anatomy and physiology teaching. The annual conference and workshops, HAPS News, and the HAPS electronic bulletin board are not about networking; they are about sharing.

As an officer I would support the continued steady growth of the Society and promote people working together to improve anatomy and physiology teaching. I would strengthen the base of corporate membership and help the Core Curriculum and Competency Testing Committees establish guidelines and evaluations for anatomy & physiology programs. Serving as HAPS News columnist, member of the HAPS Editorial Board, member-at-large of the HAPS Executive Committee, and coordinator of the 1993 HAPS Conference has prepared me for the challenges facing HAPS as it grows from a small society into its role as a leader in science education.

John A. Knesel
Nominee for Secretary-Treasurer

I am excited about the possibility of serving as the Secretary-Treasurer of HAPS because this represents an opportunity to become more active in an organization dedicated to the teaching of students. During the past three years, I have contributed to HAPS by serving on the Editorial Board and the Membership Committee.

Since 1985 I have been an Associate Professor of Biology at Northeast Louisiana University (NLU), where I earned BS and MS degrees in 1971 and 1974. My Ph.D. is from Purdue University. I teach pathophysiology, neurology, and animal physiology. Offices that I have held include: President of the NLU Faculty Senate, President of the NLU Sigma Xi Club and Secretary of the NLU Graduate Council.

Margaret A. Moyer
Nominee for Member-at-Large

I have been a faculty member at California State University at Long Beach for 17 years (Department of Biology and Department of Physical Therapy); a faculty member at Cypress Community College for 8 years (Science and Mathematics Division); and a faculty member at the University of California at Irvine for 3 years (Department of Anatomy and Neurobiology). During this time I have been exposed to a diverse spectrum of academics. I am very interested in working to establish curriculum continuities among the different levels of higher education and in bettering the quality of teaching within the university environment. Through a national organization such as HAPS, communication channels can be established that are both more efficient and productive. I look forward to actively participating in modifications and changes in the health science fields.

William Nicholson
Nominee for Member-at-Large

I believe that the Human Anatomy and Physiology Society is the best avenue for those of us involved with teaching Anatomy and Physiology to share our experience and expertise with each other. I also believe that the Society can be of help in the future as more and more government intervention attempts to shape our courses. If we are at the leading edge, we as a group can influence this outcome. As professionals in this field, we should be the leaders. I would like to help HAPS in the endeavor.

Betsy Ott
Nominee for Secretary-Treasurer

For me the best feature of HAPS has been its emphasis on the "nuts and bolts" of teaching. I have benefited greatly from past annual meetings, and I would like to become more involved with HAPS. I'm currently chair-elect for the two-year college section of the National Association of Biology Teachers (NABT). My hope is to coordinate joint activities between NABT and HAPS. I have taught anatomy and physiology at Tyler Junior College for the past 10 years. My BS and MS degrees in biology are from the University of Alabama. From 1980 to 1982 I taught human physiology at Auburn University. Practicing what I teach in reproductive biology, I gave birth to a daughter on Christmas Day, 1992.

Henry Ruschin
Nominee for Member-at-Large

When I came up with the idea of starting an organization for anatomy and physiology teachers here in Ontario in 1987 (Colleges Biosciences Association), I had no idea that a similar organization was beginning to form south of the Canadian border! When I found out in 1988, I came down to the Triton conference armed with our newly developed constitution which I made available to the founding members as a basis for the development of the HAPS constitution. I have, with one exception, been attending the HAPS conferences ever since and have found them to be excellent sources of information in the teaching of anatomy and physiology. The opportunity to socialize and exchange ideas is simply wonderful. HAPS News is also an important form of communication, and I am impressed with its professionalism.

I am currently active on two committees (Core Curriculum Committee and Editorial Board of HAPS News) so becoming a member-at-large would only increase my commitment to HAPS by continuing to provide a link between HAPS and Canadian organizations such as the Colleges Biosciences Association as well as providing ideas for workshops and newsletter articles.

Sandra Abell Uyeshiro
Nominee for President-Elect
Nominee for Member-at-Large

I have been a member of HAPS since it was founded at Triton College in June, 1988 and served as Chair of the Membership Committee from 1989 to 1990. In 1991, I was elected Secretary-Treasurer of HAPS and will serve in that role through May of this year. My BA degree in Biology is from Bellarmine College in Louisville, Kentucky and my MS degree is from Purdue University in Biology Education. Since 1981 I have taught anatomy and physiology at Modesto Junior College in Modesto, California.

I took a sabbatical (1989-90) and spent the year shadowing nurses in all departments of a local hospital to determine what anatomy and physiology material was most important for students in health science occupations. I relate class material to "real life" situations for the students as often as possible. I served as a member and officer on the Faculty Senate at Modesto Junior College and as a member of the Modesto City Schools District Advisory Council for Gifted and Talented Education.

For relaxation I enjoy spending time with my husband and four children, watching my children's athletics events, lunches with friends, walking and a long, hot bath.
7th Annual
Human Anatomy and Physiology
Conference and Workshop

May 22-27, 1993
Lamar University
Beaumont, Texas

HAPS members who requested a REGISTRATION PACKET should have received it by the date of this newsletter. If you have not received a registration packet or if you would like to request one, please contact:

Wayne Carley
1993 HAPS Conference Coordinator
Dept. of Biology
Lamar University
Beaumont, Texas 77710-0037
(409) 880-8432 or HAPS HOTLINE (800) 448-4277

Although you may still register at the conference, the advanced registration deadline is May 10, 1993. After this date, a $25 late registration onsite fee will be included.

8:30 am
1. Writing Effective Test Items; Karen LaFleur; South Carolina
2. Interactive CD ROM in the A&P Classroom; sponsored by Wm. C. Brown, Publishers
3. Using Artificial Blood and Urine in the A&P Laboratory; Brian Schmaefsky, Texas

10:30 am
5. Winning Strategies for Grant Proposals; Lois Kerschen, Texas
6. What's Inside Your IBM-compatible Computer and How to Add Accessory Boards to What's Already There; Wayne Carley
7. A Survey of Anatomy and Physiology Instructors—Results from HAPS 1992; Charlene L. Newby, Michigan
8. Developing Animal Care Facilities and Programs; Craig Clifford, Oklahoma
9. Instructor Swap Sessions on Effective Techniques for Lectures

1:30 pm
10. Case Histories as a Teaching Strategy in A & P; Dee Silverthorn, Texas
11. Gender Identification Using Skulls; Bob Smoes, Maryland
13. Publishing in Anatomy and Physiology; Penny Hansen, Editor, Advances in Physiology Education, Newfoundland
14. Instructor Swap Sessions on Effective Techniques for Demonstrations

3:30 pm
15. Using the Laser Disc in the A & P Classroom
16. Concept Mapping as a Teaching and Learning Tool in A & P; Carole Smith, Texas
17. Effective A & P Lectures; Theresa Page, Texas
18. Instructor Swap Sessions on Effective Techniques for Laboratory
HAPS MEMBERSHIP FORM AND INTEREST SURVEY

If you would like to join a supportive and enthusiastic group of teachers who share your interests and concerns, please complete the attached membership survey and form and mail it along with a check or money order for $20 (made payable to the Human Anatomy and Physiology Society) to:

John Dustman, Ph. D., Chair, HAPS MEMBERSHIP COMMITTEE
Indiana University NW
3400 Broadway
Gary, IN 46408

MEMBERSHIP (Check One)  Office use only:
O NEW  MEMBERSHIP BEGINNING DATE __________
O RENEWAL  MEMBERSHIP EXPIRATION DATE __________
O CHANGE OF ADDRESS

NAME ________________________________  Last  First  Middle

INSTITUTION NAME __________________________

O INSTITUTION ADDRESS __________________________  DEPT. _______

__________________________  RANK ______________

__________________________  PHONE ____________

O HOME ADDRESS: __________________________  PHONE ____________

__________________________  FAX ____________

O BITNET ADDRESS __________________________  O INTERNET ADDRESS

The newsletter is automatically sent to your institution address unless you indicate otherwise BY CHECKING THE HOME BOX ABOVE.

To assist the Society in meeting the needs of its members, please complete the survey form shown below. Please check each area in which you have developed a particular expertise. Expertise can be defined for example as acquiring reading or applied knowledge in a given area, implementation of a technique or concept in a human anatomy and physiology course, or writing successful grants. Your participation in HAPS is greatly appreciated.

O Use of Cadavers  O Physical facilities design  O Computerized library searches
O Electronics in the lab  O Museum displays  O Computerized data acquisition systems
O Lecture testing methods  O Grants  O Videomage acquisition systems
O Lab testing methods  O Leadership skills  O Instructor/course evaluation techniques
O Management/administrative skills
O Implementing computers in the class room  O Gradebook programs
O Radioisotope or other specialized chemical use in the laboratory  O Team teaching
O Disabled students or students with learning disabilities in the classroom  O Writing articles/textbooks
O OTHER (PLEASE SPECIFY): ____________________________________________  O Laboratory safety
relationship to the major concepts discussed in the teaching unit. When the nervous system is being discussed for example, an assignment topic for problem-solving might be to develop a working knowledge of the autonomic nervous system. For background I accumulate references such as the textbook, other related texts and journal articles on the subject. I try to keep the importance of the problem-solving assignment for students foremost in mind as I select the learning goals that I hope to accomplish in the class.

Teaching Technique
Information from the accumulated references is incorporated into the lectures and assigned readings. For example I would explain the birth process in class and then ask students as part of their homework assignment to answer the question: How would one go about delivering a baby in a taxi during a traffic jam? The next day we put their ideas on the chalkboard, discuss them and compare their answers to the procedures an obstetrician would use in this situation.

Problem-Solving Exercises
Students need practice in problem-solving. Most students are not required to think; rather they are trained to simply memorize and repeat information for exams. In my classes students use guide books which contain sets of problem solving exercises for homework assignment (Stencel 1992). We go over these practice exercises in class before each exam.

Problem-Solving on Exams
If you teach it, you should test it. Students learn quickly that if it is going to be on the exam, they had better learn it. Selected problems from the practice exercises (problem-solving) are included as part of my essay questions on both the weekly quizzes and the longer one-hour exams.

Evaluation of the Problem-Solving Unit
How did the unit improve learning and how can improvement be measured are the two most important questions one must ask after completing the project. To measure learning improve-ment, results from a pretest could be compared with the results from a posttest, or you could ask students to write a short essay about what they learned and how the problem-solving assignment helped them understand the material. In my research (Ph.D. dissertation at Southern Illinois University, Stencel 1986), I found that student groups exposed to problem solving exercises could memorize even better than with didactic teaching alone. In a second study (Stencel, 1992) students were given a pre-test followed by instruction and practice in problem-solving. When the same group of students was given a post test, it was observed that on three multiple choice questions they performed about 53% better and about 0.1% better on one essay question.

Over the years I have observed that students have a better working knowledge of the subject when they are exposed to problem-solving exercises. Problem-solving encourages students to learn thinking strategies in order to solve problems. They develop a better understanding of the information and can apply it to increasingly difficult problems. For example, a person who expects to work in a medical field must "think on his or her feet," and should have an overview and understanding of the entire subject, not simply parrot the same phrase over and over.

The model that I have developed and applied in my classes could be used by other colleges and in other disciplines. Several of my colleagues who teach anatomy and physiology at community colleges are interested in using the technique, and I have applied to the National Science Foundation Chautauqua workshop program for permission and the funds to present seminars nationwide on this topic.

REFERENCES:


Stencel, J., 1992, Using Algorithms in Solving Synapse Transmission Prob-

ROLES PLAYING IN THE LECTURE

submitted by
Susan O. van Loon
Our Lady of Holy Cross College
New Orleans, LA 70131-7399

Last semester, while teaching the urinary system, I gave out sheets of paper to each student in the class (we are fortunate in having small classes -- just 24 students in each section). On each sheet was written one of the following: water, sodium ions, potassium ions, proteins, red blood cells, white blood cells, platelets, bicarbonate ions, chloride ions, glucose, amino acids or urea. Each student was assigned a role based on what was written on her or his paper and directed to stand on one side of the classroom. At a signal, representing filtration, each student had to move to the other side of the classroom if the substance they symbolized could pass through the filtration membrane. We used the lab tables in the middle of the classroom as a symbol for the membrane.

The cast members "who were not filtered" became the audience for the next scenes involving reabsorption and secretion. As you can tell from this rather sketchy outline, this is an open-ended technique that lends itself to improvisation. I found that having students become active participants in the learning process (in the most literal sense!) increased understanding of the processes involved in urine formation. To play their parts, students had to know how to move; any red blood cell that tried to follow the crowd across the filtration membrane caused a furor and quickly learned a lesson. This exercise was a light-hearted way to end a lecture on a challenging topic. Student response was positive, and I plan to use the same technique this semester.

THE LECTURE SKETCHBOOK

submitted by
Robert I. Smoes
Towson State University
Towson, Maryland 21204-7097

A frustrating crisis for many students occurs when an instructor presents an illustration (perhaps chalkboard drawing, overhead transparency, or projection slide) and then begins a detailed and complex lecture based on that illustration. The student's options: copy the illustration as accurately as possible and miss the lecture, take accurate lecture notes and skip the illustration, or try to simultaneously copy the illustration while taking lecture notes. Most students try the last option with varying degrees of success.

My solution has been to compile, in advance, a complete set of the lecture illustrations that I plan to draw on the chalkboard during the semester and to make them available to the students as a packet at the beginning of the semester. These drawings have the advantage of being more carefully drawn than my chalkboard drawings and much more accurate than those that appear in student's notes. Each sheet has one or two drawings and room for lecture notes or labels. Many are intentionally left incomplete to encourage students to complete them as part of the note-taking process. In some cases drawings are done in a workbook-style (fill in the blank) format although I have discovered that it is best to keep the blanks to a minimum since they often serve as distractors for students who listen in-
tently for the "right word" to fill in the blank rather than following the discussion of the concept.

A set of plates with labels is available and gives students a chance to check the accuracy of their notes. I try to insulate that students are actually checking their work rather than simply copying the answers from the plates. Student response to the "lecture sketchbook" has been overwhelmingly positive. In addition, students seem to take more complete and more accurate notes and are more successful in following the flow of the lecture.

The complete set of illustrations (about fifty sheets) is duplicated and sold as a packet by a local print shop (Kinko's). The packet is unbound but punched for a three ring binder so students can insert them in appropriate places in their regular lecture notebook. A few students have had them bound. Since all drawings are my own, no copyright permission or royalties are involved and the cost to the student is truly nominal (less than $4 per packet.

ANSWERS TO QUESTIONS LISTED IN UPDATE SYMPOSIUM ON PAGE 15
1) Ebullition of the patella and distal femur from continual hyperflexion of this joint while kneeling would be seen in the gardener. 2) The painter would have enlarged facets on one side of the body at the first costochondral joint where the clavicle articulates with the sternal from continually holding the hand above the horizontal plane. 3) A cowboy would show herniations on vertebral discs from vertical jarring, acetabular deformity from prolonged sitting, very powerful adductor muscles in the leg from clamping the legs around the body of the horse, an enlarged deltoid tuberosity from powerful arm muscles associated with roping, and multiple fracture sites from falling off the horse. 4) The equestrian would have deformities similar to those listed in answer three but without the multiple fractures and enlarged deltoid tuberosities since equestrians ride in a more controlled setting and are not involved in roping activities.

HAPS News May 1993 page 11
At the Cutting Edge

Current Topics in the Literature

Nontraditional Inheritance:
New Rules to Explain Human Heredity

written by
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During the last few years, evidence has accumulated which indicates that many kinds of genetic phenomena are not explained by traditional Mendelian concepts. Less than one-half of the clinical disorders can be explained by long-held rules governing the transmission of recessive and dominant genes. The idea that male and female parents both contribute equally, gene by gene, to their offspring is being questioned. Gene expression which cannot be explained by Mendelian Genetics has in the past been better understood by geneticists working with fruit flies, worms and mice.

As the etiology of disorders is more clearly explained by contemporary genetics, it becomes even more important for human anatomy and physiology instructors to understand the following three nontraditional mechanisms of inheritance: mosaicism, uniparental disomy, and genomic imprinting. Mosaicism is a condition in which a few body cells differ significantly from the majority of cells. Usually a single gene is involved although on occasion the condition may involve an expression by a whole chromosome. Conditions such as Turner’s Syndrome, hyperplasia (cancer), X-inactivation (the genes on one X-chromosome are not active) and tissue differentiation occur often and are responsible for functional mosaicism. Women who are otherwise normal may have some cells in which most of the paternally derived X-chromosome is active, but the maternally derived X-chromosome is not, or vice versa. Through the use of specific DNA markers or the location of known genes, specific examples of mosaicism have been found associated with disorders such as segmental patchy neurofibromatosis, osteogenesis imperfecta (Type II or perinatal lethal form which results in mental retardation), individuals with hypomelanosis (of Ito) and asymmetric growth.

There are several variations of disomy. If two copies of a particular chromosome come from one parent and none from the other parent, the condition is termed uniparental disomy. If nondisjunction (the chromosomes do not separate) occurs during Meiosis I, the resulting zygote will have two identical chromosomes from the one parent. The other chromosome comes at fertilization. Heterodisomy produces selective loss of a single chromosome during somatic cell division.

Isodisomy occurs where there are two copies of the same parental chromosome as a result of nondisjunction during Meiosis II; selective loss of the single chromosome is again involved. This pattern of inheritance which is termed “nonfamilial” recessive is responsible for some cases of cystic fibrosis (CF), i.e., both of the 7s chromosomes come from the mother in a situation where the father apparently is not a carrier for CF. In about 20-30% of the cases of Prader-Willi syndrome which are due to uniparental (maternal) disomy of chromosome 15, the zygote starts as a trisomy 15 (usually lethal) but the loss of a paternal chromosome with the segment necessary for normalcy results in a form of obesity with potential mental retardation. Uniparental disomy may also be involved in some types of intrauterine growth retardation (IUGR) and overgrowth patterns.

Genomic or genetic imprinting is a theory that contends that gene expression depends upon whether the genetic information comes from the mother or father. Observations in mice, for example, have shown that placenta development is primarily dependent upon paternally-contributed DNA, whereas the maternal contribution is necessary for embryogenesis. The formation of hydatidiform moles and malformation of the fetal portion of the placenta is produced when the fertilized egg contains two paternal nuclei and no maternal DNA. It occurs anew with each generation and depends upon the gender of the parent, not the gender of the offspring. Parental influence may be seen in two other disorders: Prader-Willi syndrome, a form of obesity with potential mental retardation and Angelman’s syndrome, a form of severe mental retardation that occurs with jerky, repetitive body movements and inappropriate moments of laughter. Deletion of the gene in the chromosome inherited from the father causes Prader-Willi syndrome while the same gene deletion in the chromosome from the mother results in Angelman syndrome.

Understanding genetics is critical for future clinicians as well as the general public. Once a condition is identified and location of the gene(s) is determined, the treatment strategy in a growing number of genetic disorders is to try to transfer normal genes into the body cells of the afflicted individual. Viruses and bacteria are playing a critical role in this technique since

(continued on page 15)
OLD TIMER’S TEACHING TIPS

presented by
Gil Desha
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Gil Desha has been in the teaching business for 36 years and has had many interesting experiences. Still there are times when he feels like it’s his first year, just repeated 35 or so times. Gil’s teaching load consists of nine lecture hours and four lab sections per week.

His students are usually older students in a nursing program. Their background knowledge in such areas as chemistry is minimal, so they are scared at first. Since registration at Gil’s institution is on a first come, first served basis, and since Gil has become so popular over the years, students sleep out overnight to be the first in line for his classes. Gil is very proud of this, and he believes that you only get one chance to make a good impression.

Gil believes in motivating, not intimidating. He recommends not passing out the whole year’s syllabus as this makes the class look too daunting. One semester at a time is much easier for the students to handle. His philosophy which he conveys to students is, “If they try and fail, he’ll take part of the blame, but if they fail to try, then they take all of the blame.”

Gil provided the following tips for successful teaching. 1) He puts his class notes in the library where students can copy them if they wish. Videotapes of lectures are placed there as well. Copies of his notes can be purchased in the bookstore. Sometimes less detailed notes are given out in class so students can fill in details as the lecture progresses. 2) He suggests rewriting lecture notes, either by hand or on a computer, because you learn as you rewrite. 3) To keep students aware of the objective at hand helps them know where the discussion is going. Material should be designed specifically for the class. Canned material that doesn’t agree with what the instructor is saying won’t work well in class, and it will turn students off to the topic. 4) In using the overhead projector, he shows only one line at a time to prevent students from focusing on the rest of the material until he is ready to discuss it.

Gil followed his conference presentation with a question and answer session where the audience responded to his suggestions and offered suggestions of their own. A few of those ideas and comments are contained in the following list.

- The audience had concerns about competency exams and the tendency for teachers to teach to the exam.
- Gil was asked if he felt it was worthwhile giving handout sheets when there was so much information already in the textbooks? His comment was that notes may not be as fancy, but they are still useful to students.
- It was suggested that at the end of the discussion of a particular system, instructors have students summarize what they felt they needed to know about that system. Students are amazed at what they really do know.
- For difficult topics such as mitosis and meiosis, members of the audience recommended having students work together to set up mini-practicals for quizzing each other. Make each lab table a group of experts on a given topic and have them teach others.
- Include a few sample practical-type questions on the weekly quizzes to get students used to this type of test.

- Don’t give timed lab tests, and include more stations than the number of students in the class. One member of the group commented that grades improved once timed tests were eliminated from her/his class.

- Hand out lists of analogies. Discussion of those analogies and the places where they aren’t true help students understand the material. Some analogies recommended were: an old rolled up toothpaste tube or an empty balloon wrapped around a pencil to represent the myelin sheath. Lego blocks used to represent the lock and key model for enzymes. Hills and valleys used to represent gyri and sulci.

- Mnemonic devices were also suggested as aids to help students memorize material. For example, All Dogs Eat Kalcen can be used to remember the fat soluble vitamins-A,D, E, and K.

Gil gave us some information about his background and how he ended up in anatomy and physiology. When he came out of the service, Gil wanted to go to school, get married, have children, and get his golf handicap down to 10. Although Gil attended several colleges and universities, he never completed his Ph.D. He just never had the time to take off for a year or more to pursue it. Still, he was nominated for the Piper Award for Teaching Excellence in 1990. Gil is justifiably proud of his teaching accomplishments.

reported by
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FROM THE 1992 HAPS CONFERENCE IN SAN

RECONSTRUCTING BEHAVIOR FROM THE SKELETON

presented by
Charles F. Merbs, Ph. D.
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How can you tell a working cowboy from an equestrian who rides as a hobby? No, it's not the boots and hat! It's the skeleton!

Dr. Charles Merbs, a physical anthropologist from the University of Arizona became interested in reconstructing behaviors (specifically occupations) from the skeleton while working on an ossuary containing 500 skeletons from a single population of Huron Indians. Dr. Merbs primarily applies his expertise as an archeologist in trying to reconstruct behaviors of individuals and populations from the past. However, he has also assisted law enforcement agencies as a forensic anthropologist in determining occupation or sporting interests from skeletal remains. This is valuable information that helps with the frustrating task of matching an unidentified skeleton with missing person reports.

Although the skeleton is considered the most rigid and inflexible tissue in the body, it is actually very plastic and flexible. It responds to stresses by conforming, or deforming, in the stressed area. Continual pressure on the skeleton from repeated movements of a specific type gradually changes the shape of the bones by erosion or deposits of bony material.

The plasticity of bone is easily seen in the skulls of infants from tribes that use cradle boards to shape their children's heads. Growth in the skull occurs along suture lines, and despite restrictions in one plane, the skull will almost always grow to its normal size, but with exaggeration in the other plane. For example, a South American tribe bound the sides of the infant head which produced a very elongated skull. Skulls from Pueblo tribes revealed a vertically-elongated deformity, caused by the use of cradle boards that restricted growth on the anterior-posterior axis.

Enthesites, the areas where muscles attach to bones, reveal much about the size and power of the muscles in an individual. Enthesopathy is noted in the deltid tuberosity of the Eskimo males, who probably have the most powerful deltid muscles of any population. It is a direct result of paddling kayaks, throwing harpoons, and lifting heavy objects above the horizontal plane.

Dr. Merbs also had the opportunity to study a skeleton from a crew member of King Henry the XIII's ship, probably a long Bowman. During examination of the skeleton, he noted that the epiphyseal plates in the skeleton had not fused even though it was the skeleton of an older male. The long bow requires a pulling force of 300 pounds or more, and most likely young men had to begin training for this in childhood when their epiphyseal plates were present and active. The amount of stress exerted on the arms by the long bow prevented closure of the epiphyseal plates in the bones of the shoulder joint.

Tooth deformities also demonstrate clearly the activities of the individual. In India, it was a common practice in the past to brush the teeth with twigs. This produced a very high gloss on the teeth, but over a long period of time would actually wear away the enamel. As a result, skulls from India often show highly polished teeth. Eskimos often have teeth missing because they use their teeth for rather unusual things, such as popping caps off Coke bottles (not the twist-off variety) and carrying heavy things such as a very heavy line of fish. Enamel chipping may be the result of eating frozen meat or crunching bones to get at the marrow.

Tooth deformities can also reveal whether the individual was a habitual pipe smoker. Pipe smoking (holding the pipe clamped between the jaws on one side of the mouth continually) wears away the enamel of the premolars on one side the mouth but not on the other side. Clay pipes are very
POSUM

DIEGO, CALIFORNIA

abrasive and produce a distinctive cusp of the teeth.

Eskimo skeletons reveal interesting spine deformities that clearly relate to their daily activities. Males frequently have deformities in the lumbar area, while females have deformities in the thoracic area, probably related to carrying children on their back. A condition called 'kissing spines' results in which the spinous processes are forced together (they actually touch each other). An extra joint is formed at the point of contact.

Compression fractures in vertebral bodies are also seen in Eskimo populations, probably from riding in dog sleds. This type of jarring is very hard on the spine. A modern-day activity, snow-mobiling, produces a similar type of injury.

Dr. Merbs closed the hour by discussing several examples of osteopathologies caused by more modern occupations. Take the following quiz to determine how well you would do as a forensic osteopathologist:

1) What type of eburnation (wearing away of cartilage at a joint with subsequent destruction of the articular surfaces of the bones) would you expect to see in a gardener?
2) What osteopathy would you see in the skeleton of a house painter?
3) What enthesopathy would you see in a working cowboy?
4) How about an equestrian who is not

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REGIONAL HAPS WORKSHOP

On Saturday, February 20, 1993, HAPS sponsored a one-day regional workshop at Cape Girardeau, Missouri. Co-sponsors were Southwest Missouri State University, Mineral Area College and St. Charles County Community College. Rhonda Gamble of Mineral Area College and Steve Trautwein of Southeast Missouri State University were the coordinators. Kevin Patton of St. Charles County Community College, Lucia Tranel of St. Louis College of Pharmacy and Steve Overmann of Southeast Missouri State University provided invaluable assistance in recruiting speakers and in helping with local arrangements. Financial support was provided by HarperCollins College Publishers, Mosby-Yearbook, Inc., Prentice-Hall, Wm. C. Brown Publishers and the Department of Biology at Southeast Missouri State University.

Sixty-two people attended the workshop. Many were not HAPS members and most had never attended a national meeting of HAPS. They came from Missouri, Illinois, Arkansas, Kentucky, Indiana and Tennessee and were very enthusiastic about the opportunity to learn new teaching techniques and acquire the latest information in anatomy and physiology. There were six presentations over nutrition and exercise, active learning in the classroom, renal physiology, women's ways of knowing, control of respiration and invertebrate models in neurobiology.

Based on my experiences with this workshop, I am even more convinced of their value. The participants were eager to learn and to "talk shop" with colleagues. Many of the participants are the only anatomy and physiology teachers at their respective schools. Coordinating a meeting like this one requires a great deal of work, as I knew it would, but Bob Anthony and the other members of the HAPS Executive Committee were very helpful. Remember, every time a workshop is offered, it makes it a little easier for the next coordinator. I urge any HAPS member who may be interested in coordinating a regional meeting to talk to Bob Anthony or any of us who have done one.

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they can be modified to serve as the carriers of the gene into the cell. In some forms of cystic fibrosis, for example, a cold virus is modified to carry a specific gene into the respiratory tract of the cystic fibrosis patient.

REFERENCES:

Hall, Judith, "Genomic Imprinting: A New Frontier", In the Genome, Gene-Screen, Dallas, Texas, 1991.

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