Message from the President

Don’t Lecture Me on Lectures!

Dear fellow teachers of physics,

A combination of the title of the upcoming ISAAPT Fall Meeting, *Teaching Better Physics Better*, and the location of the meeting has stirred me to revisit a delightful article I read several years ago by David Griffiths, the recipient of the 1997 Robert A. Millikan Medal (the location for our Fall meeting is Millikin University, hmmmm). The article was actually a transcription of his acceptance speech at the national AAPT meeting, and was published in the American Journal of Physics (Am. J. Phys. 65 (12), December 1997).

Now, we are somewhere in the neighborhood of the tenth anniversary of a reform movement to revitalize physics education. Those of you readers who are more “in the know” about the exact dates of the pioneering efforts of the reform movement may take me to task about the exact number of years since it all started, but at least I think it was around 10 years ago that “physics education research” started to become a familiar term. One goal that seems to me to permeate the movement is the debunking of the traditional lecture as a sound mode of physics instruction. And not just debunking, but there seems to be within the movement the attitude that our traditional teaching modes are hopelessly flawed and that not even a good lecturer can effectively lecture, regardless of any evidence or argument to the contrary. Griffiths does not buy into this. As you read through Griffiths’ article, it becomes immediately apparent that he is not an advocate of the need to reform physics teaching, and indeed still rather likes the traditional lecture. He make a very convincing, and intellectually sound case for the traditional methods.

My first direct experience with true debunkers occurred while attending the "Building Undergraduate Physics Programs for the 21st Century Conference" in Washington, D.C., a meeting jointly sponsored by the APS and the AAPT. We had just gathered into our “breakout” groups to discuss the role of reforming teaching methods in revitalizing undergraduate physics programs. With a majority of debunkers present, the overwhelming sentiment was toward a definite need to stop lecturing, and the few of us in the minority lecture party were continually “lectured” about the futility of the lecture. Upon suggesting that perhaps the effectiveness of any method of teaching strongly depends on the passionate dedication of the teacher we were informed that such an assertion was “demonstrably wrong!”

Now I believe that I am open to new ways of instruction, and indeed, I have over the last 10 years experimented with many of the novel modes of instruction which have come forth as a result of the reformers, but I always seem to end up convinced that the new mode I had been trying was not really better than the traditional methods, and not worth the extra time and effort I usually expended in implementing the new fangled ideas. This, of course, is my own opinionated conclusion based on my own personal physics education experiments. For me the most important thing to bring to a classroom (perhaps along WITH several demos and the Force Concepts inventory?!) is my passion for the subject matter born out of being deeply involved in scientific pursuits, and my dedication to the learners. I really do believe that such a combination CAN be demonstrably effective for teaching physics.

(Continued on page 2)
Message from the President (from page 1)

Well, if I have stirred you up by all this, and provoked you all a bit, then my mission in writing this short column has been accomplished. I believe these are things which must be continually discussed, and we should never believe that we and/or our chosen method of physics instruction have “arrived” at such a state that we are beyond critical self examination towards improvement. I look forward to seeing you all in Millikin, and would love to discuss further these issues with you at the meeting. In the mean time, independent of your “mode,” keep up the good teaching.

Kelly Roos
President ISAAPT
Bradley University

FUTURE ISAAPT MEETINGS

• Spring 2003 – April 11,12 - Knox College, Galesburg
• Fall 2003 – October 10,11 Illinois State University, Normal
  Spring 2004 - University of Illinois, Urbana-Champaign
  Fall 2004 - Bradley University, Peoria
  Spring 2005 - Southern Illinois University, Edwardsville
  Fall 2005 - Riverside Brookfield High School, Riverside

Cliff Parker Receives Outstanding High School Physics Teacher Award

Clifford Parker (left) receives the award for the Outstanding High School Physics Teacher from Gary Wolber. (photo courtesy of David Renneke)

NOMINATIONS FOR OUTSTANDING HIGH SCHOOL PHYSICS TEACHER SOUGHT

Each school year the Illinois Section of AAPT is pleased to receive nominations of outstanding high school physics teachers in the state. Fellow teachers and school administrators who are aware of exceptional performance and enthusiastic student response are encouraged to write a brief letter of nomination and send it by December 15, 2002 to:

Diana Roth
1300 N. 11th St.
Lanphier High School
Springfield, Illinois 62702
(217) 525-3080
droth@springfield.k12.il.us

The teacher who is selected will be notified and presented with the award at the spring 2003 meeting of the Section. Guidelines for this award were presented to the Council and are available from the Chairman of the committee listed above.

New Domain Name for Website

isaapt.org
email address
webmaster@isaapt.org
PAPERS AND PRESENTERS AT THE SPRING MEETING AT EASTERN ILLINOIS UNIVERSITY

Invited Talks

International Space Station: An Overview by an EIU Physicist. Jim Allen, Boeing, Houston, Texas

Mile High Photonics. Tom Baur, President and CEO of Meadowlark Optics, Frederick, Colorado

Overview of ABC Laboratories and Careers in Health Physics. Jeff Vollmer, Certified Health Physicist, ABC Labs, Columbia, Missouri

The Nuclear Battery. Ken Bower, President and CEO, Trace Photonics, Charleston, Illinois

Contributed Papers


Assessment of a New Laboratory Initiative in University Physics. David Pawlowski, Zak Knott, Paul W. Wang, Kevin R. Kimberlin, Bradley University, Peoria, IL 61625.

Implementing Web-Based Activities (Tycho, UIUC) in the Community College. Curtis Shoaf, Parkland College, Champaign, IL 61821.

Developing Inquiry-Based In-Class Activities for the Large Lecture Astronomy Course. Rebecca Lindell, Southern Illinois University Edwardsville, Edwardsville, IL 62026-1654.


The Restricted Three Body Effective Potential. Andrew C. James, Keith Andrew, Eastern Illinois University, Charleston, IL 61920.

The Patience of Building a Classical Cassegrain, Part II. Anne Wake and Art Braundmeier, Southern Illinois University Edwardsville, Edwardsville, IL 62025.

Dave Cornell - Take 5 - Simple Light Intensity Comparator. Filter paper with a drop of Wesson oil. (photo courtesy of David Renneke)


Eeeek! Programming and Physics and Women, Oh My!!! Kimberly Shaw, Tom Foster, and Jerry Pogatshnik, Southern Illinois University Edwardsville, Edwardsville, IL 62026.

Changes in Science Education in Illinois. Duane Ingram, Rock Valley College, Rockford, IL 61114.


Understanding the Universe in 75 Minutes a Day. Lee Carkner, Augustana College, Rock Island, IL 61201.

Physics Instruction on the Web. Doug Davis, Eastern Illinois University, Charleston, IL 61920.


Using the Adjoint Operator to Solve Fluid-Flow Stability Problems. James Gumbart, James Rabchuk, Western Illinois University, Macomb, IL 61455.

Spectroscopic Studies of the Structural Changes Associated with Low Nickel Doping in a Polycrystalline Superconductor. No Soung Myoung, Michael C. Baxa, Doug A. Franklin, and Mark S. Boley, Western Illinois University, Macomb, IL 61455.
Standardization of a Capacitive Bridge Device for the Measurement of Minute Magnetostrictive Displacements. Naveen K. Jha, Jason Wilson, Doug A. Franklin, and Mark S. Boley, Western Illinois University, Macomb, IL 61455.

Panel Discussion

Panel Topic: Careers in Physics
Left to right: Neil Phillips, David Bowman, Tom Baur, Jeff Vollmer, Ken Bower and Jim Allen. (Photo courtesy of David Renneke)

Workshops

A Taste of the Modeling Method of Instruction in Physics, Benjamin Thompson, Jason Ryan, Aaron Stremmel, Larihel Johnson, and Shannon Mandel, Student Teachers in Physics, Illinois State University, Normal, IL.

Lasers in the Classroom, Steven W. Daniels, Department of Physics, Eastern Illinois University, Charleston, IL.

Inquiry Practice in High School Physics, Carl J. Wenning, Coordinator, Physics Teacher Education Program, Illinois State University, Normal, IL.

Bringing Argonne National Laboratory Data to the Classroom, Keith Andrew, Dept. of Physics, Eastern Illinois University, Christopher Klaus, Division of Information Systems, Argonne National Laboratory, and Tim McCollum, Charleston Middle School.

Tycho: Enhancing Your Course with Web Technology, Tim Stelzer, Department of Physics, University of Illinois, Urbana-Champaign, IL.

CPDU's AVAILABLE AT Fall ISAAPT WORKSHOPS

Continuing Professional Development Units (CPDU's) will be available to in-service high school physics teachers who attend and participate in the workshops at this fall's ISAAPT meeting at Millikin University. Carl Wenning of Illinois State University has registered ISAAPT with the Illinois State Board of Education as an official service provider.

ISAAPT WEB SITE

For the latest information about the ISAAPT and other kindred topics, check the Website: http://isaapt.org Dave Renneke manages the site and is constantly updating and improving this information source. If you couldn’t make the Spring meeting, check out the particulars via the Internet!

CALL FOR NOMINATIONS

The call for nominations for ISAAPT’s Distinguished Service Citation has been extended until March 1. The distinguished service citation recognizes outstanding contributions to the field of physics teaching in the state of Illinois. Special recognition is given in the areas of:
* leadership of colleagues and students through physics teaching
* professional contributions to section activities through contributed papers, workshop presentation, committee service, or elective office
* distinguished service at the teacher's home institution.

Association members are encouraged to nominate those who they feel are worthy of recognition. For complete details and information about nominating a colleague, visit the ISAAPT web site at the following URL: http://helios.augustana.edu/isaapt/citation.html

ISAAPT GUIDEBOOK PROGRAM

By action of the Executive Council on April 15, 2000, the ISAAPT Guidebook Program was renewed until the spring of 2003, at which time the program will again be reviewed. Physics teacher education program coordinators may request an AAPT guidebook for qualifying students. Students eligible to receive a guidebook under this program are those who are:
- enrolled in a physics or science "methods" course,
- soon to be engaged in student teaching,
- physics teacher education majors, and
- enrolled in a post-secondary institution within the ISAAPT zone.

The ISAAPT Guidebook Program will provide one resource guidebook from the AAPT to each qualifying student as requested. The guidebook selection is currently restricted to the following guidebooks: *String and Sticky Tape Experiments*, *A Potpourri of Physics Teaching Ideas*, and *A Demonstration Handbook for Physics*. Physics Teacher Education program coordinators may request one guidebook for each of their students who qualify; students may not request books themselves. Program coordinators who wish for their qualifying students to benefit from this program should contact the ISAAPT Secretary to place requests.

Also at the April 15, 2000, meeting, a task force of three individuals (Diana Roth <droth@springfield.k12.il.us>, Ann Brandon <llbrandon@aol.com> and Debby Lojkutz <Lojkutz@aol.com>) was formed to review the list of available guidebooks, and to review and make recommendations for changes in the listing of available books. If you would like to make recommendations, please contact any of the three named individuals.

**AAPT High School Physics Grant**

AAPT's Innovative High School Physics Teachers Grants offers financial support for innovative physics programs or activities that seek to increase student enrollment or to enhance student achievement in physics. Deadline for applying for one of these grants is November 1, 2002. For more information, please go to http://www.aapt.org/events/02hsg.html.

**JOURNAL OF PHYSICS TEACHER EDUCATION ONLINE**

Journal of Physics Teacher Education Online is dedicated to investigating and documenting significant issues and challenges in the education of physics teacher candidates. With a focus on the scholarship of teaching, the journal seeks to generate discussion and promulgate sustainable, long-term changes in educational research, policy and practice. Journal articles will foster deep, significant, lasting learning for physics teacher educators and improve their ability to develop teacher candidates' and inservice teachers' understanding, skills, and dispositions.

Physics teacher educators, often only one individual working within a department of physics to prepare future teachers, are frequently isolated from their peers due to a lack of a medium of exchange. As a result, those who engage in innovative acts of teaching do not have many opportunities to share their work, and to build upon the work of others. Without an opportunity to share with like-minded peers, teacher educators are likely to remain isolated, unable to benefit from or advance the work of the physics teacher education on a broader basis. Fortunately, renewed public interest in education, the development of teacher preparation standards, and some inspiring models from physics teacher education programs around the country provide hope that the time is right for change.

The work of educating future physics teachers often involves significant shifts in thought and practice. For physics teacher education faculty, physics teacher preparation is a private act, limited to the teacher and students. Such practice is rarely evaluated by professional peers, again due to a lack of a forum to exchange ideas and share procedures. The purpose of *Journal of Physics Teacher Education Online* is to establish a forum through which the scholarship of teaching and learning can be exchanged widely and built upon. The hope is to support the development of new models of physics teacher education that foster deep and lasting understanding, while underlining the character of teaching itself as a scholarly endeavor worthy of recognition, support, and reward.

JPTEO is published online by the Illinois State University Physics Department. It may be accessed through the JPTEO web page at http://www.phy.ilstu.edu/jpteo/
PROFESSIONAL DEVELOPMENT OPPORTUNITIES FOR HIGH SCHOOL PHYSICS AND PHYSICAL SCIENCE TEACHERS

Problem-Based Learning for Teachers of Science Workshop
June 9 - 13, 2003

Real change in the practice of in-service teachers requires a sustained effort in professional development in which master teachers demonstrate new and effective ways of teaching, allow the teachers to try the new methods, and then help them to improve their practice. This workshop will show in-service teachers how to employ student-centered, inquiry-oriented, constructivist teaching practices using the techniques of Problem-Based Learning (PBL). PBL makes the classroom as real as possible for students by bringing in true-to-life problems for students to solve. Its authentic curriculum motivates students to solve engaging problems, learning science as they do so. Teachers become facilitators of learning, and not authority figures of science. For many children, exposure to traditional methods of science teaching results not in understandings, but in alienation from science. PBL can change all of this and benefit students in additional important ways. The ability of science teachers to incorporate intellectual and social skills in their teaching through PBL pedagogy will greatly influence students' success in school, in the workplace and in the community. In this workshop, teachers, taking on the role of students, will expand their content knowledge through the use of human and technological resources, apply newly acquired information, intellectual processes, and social skills to solve real-life problems. They will complete two PBL exercises: The Deer Problem and When Lightning Strikes. They will then work in small cooperative groups to create and present their own PBL's to peers. Twenty-four middle and high school science teachers will participate in five (5) full days of residential workshop training on the campus of Illinois State University from June 17 - 21, 2002. The workshop will consist of 30 contact hours of classroom time, plus additional homework time. Please note that the Problem-Based Learning workshop is made possible with the aid of Federal funding through the Eisenhower grant program. Schools sending teachers to these workshops are required to provide $250 worth of material support to teachers implementing demonstrated teaching strategies.

Modeling Method of Instruction for Physical Science Workshop
June 16 - 27, 2003

Secondary-level physical science teachers will participate in ten (10) days of workshop training and three (3) full days of follow-up training that deals with the Modeling Method of instruction. The Modeling Method of instruction has been shown to be a highly effective extension of the traditional 3-step learning cycle (observe, generalize, apply). The modeling cycle addresses the deficiencies of the learning cycle by assisting students to construct understanding from observations, by confronting student preconceptions, by examining student thought processes through the process of "white boarding" (a procedure whereby students create and present multiple representations of a physical phenomenon on 24"x32" dry erase boards), and Socratic questioning. The goal of this Modeling Method of Instruction for Physical Science project is to provide a meaningful form of professional development for in-service teachers who are inadequately prepared to teach physical science using student-centered, inquiry-based, constructivist practices identified through educational research. Real change in instructional practice will come about only when master teachers demonstrate new ways of teaching, allow less experienced teachers to practice the new method, and then help them to improve their efforts. This workshop will do just that. The principles learned here can be readily transferred to any other sort of classroom instruction. Resources for implementation of Modeling Method in physical science (integrating science, math, and technology) classroom will be provided through this grant and by support form the participant's school district. Participants will receive a Modeling Method Handbook, 10 white boards, 10 dry erase marker sets, 10 Tumbling Buggies with batteries, and 1 calculator-based ranging device for the study of motion. The workshop will consist of 60 hours of lab time, and 18 hours of follow-up during the school year. This workshop will be a residential program on the campus of Illinois State University. Please note that the Modeling Method workshop is made possible with the aid of Federal funding through the Eisenhower grant program. Schools sending teachers to these workshops are required to provide $250 worth of material support to teachers implementing demonstrated teaching strategies. Application form and school contract required.
PTRA Rural Institute
July 7-11, 2003

The Physics Teaching Resource Agent (PTRA) Project is a professional development program for rural teachers of physics and physical science within the State of Illinois. It is a program consisting of peer instruction: teachers teaching teachers. The American Association of Physics Teachers (AAPT) maintain a nationwide cadre of 200+ selected, accomplished teacher-leaders who conduct hundreds of workshops each year for teachers in their local areas and who are updated (and energized!) each summer. Over the past nine years AAPT has commissioned some 40 "hands-on, minds-on" inquiry-based workshops. The immediate objective of the PTRA Rural Institute Program is to provide a start on a program minimum of 130 contact hours of instruction over a multi-year period: 30 hours per summer plus 12 additional hours per academic year. The long-term goal of the Project is for PTRA leaders to emerge from within the ISU Rural Center to establish a program that can be continuing and self-sustaining. Application form required. (See below.)

All teacher workshops will be held on the campus of Illinois State University in Normal. Additional details, as well as a 2-page informational flier (PDF), application forms and school contracts are available at:

http://www.phy.ilstu.edu/workshops/

For additional information not found here or on this web page, please contact Carl Wenning via e-mail at wenning@phy.ilstu.edu or by phone at (309) 438-2957.

GRANT PARTICIPATION OPPORTUNITY

Illinois State University is leading the effort to obtain a $1 million, 4-year grant aimed at recruiting candidates for the position of high school science teacher. The funding agency is the National Science Foundation’s Office of Undergraduate Education, CCLI Program. If the project is funded, teacher candidates will be recruited from high schools and community colleges, and from among underemployed graduates. The grant involves four major universities, and seeks to involve a large number of community colleges and high school science teaching faculty. Community college and high school physics teachers are encouraged to become involved in this project. If interested, contact Carl Wenning at wenning@phy.ilstu.edu

Team America Rocket Challenge

The Team America Rocketry Challenge is the first national model rocket competition for U.S. high school and junior high school students. Teams are challenged to design, build, and launch a model rocket carrying two raw eggs to exactly 1500 feet, while returning both eggs to the earth unscrambled! The contest is limited to a total of 500 US high school teams and the deadline to enter the Challenge is November 15, 2002.

A grand prize pool of $59,000 in cash and savings bonds will be shared by the top five teams. In addition, three of the top ten teams are eligible to win $2500 grants, including travel expenses, to launch an advanced rocket with NASA. Each of the top 25 teams' schools will be invited to send one teacher on an all expenses paid trip to attend an advanced NASA rocketry workshop with NASA scientists and engineers, and tour research and development facilities at NASA Marshall Space Flight Center.

Detailed information, including an application, is located at >www.ROCKETCONTEST.org.
Fall 2002 Meeting of the Illinois Section of the AAPT

Teaching Better Physics Better

October 18,19  2002
Millikin University
Decatur, Illinois

Online Registration: http://www.isaapt.org


Just-In-Time Teaching to 600 Students, Mats Selen, Physics Department, University of Illinois, Urbana, Friday at 4:00 pm.

Recent Advances in Observational Astronomy, Jim Kaler, Astronomy Department, University of Illinois, Urbana, Friday evening banquet speaker.

Recent Advances in Material Science, Ian Robertson, Department of Material Science and Engineering, University of Illinois, Urbana, Saturday at 10:00 am.

Workshop 1. PTRA Rural Institute - Graphing Calculators & Calculator-based Labs (a refresher) - Friday 9-12 and Saturday 1-4, Bernard Ricca, DePaul University School of Education - Barat Campus and Carl Wenning, Illinois State University.


Contributed papers are scheduled on Friday afternoon from 2:45 to 4:00 and from 5:00 to 6:00 and on Saturday morning from 9:00 to 10:00 and from 11:00 to noon.

Dr. Ralph Miller, Professor Emeritus of Physics at Greenville College, will be honored on Friday evening with the 2002 Distinguished Service Citation.

There will be a general meeting of the section during the lunch hour on Saturday.