



## IOWA SCIENCE TEACHERS SECTION OF THE IOWA ACADEMY OF SCIENCE

**MAY 15, 2006**

**NADINE WEIRATHER, EDITOR**

### Contents of the ISTS E-newsletter that Follows:

- A Message from Your (New) President
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### A Message from your President:

“Reflections”

by Gale Vermeulen

*As I read Michael Clough’s “message from the president” in the previous (Feb. 15, 2006) ISTS e-newsletter, I was reminded of a plaque displayed in my chemistry classroom, which was given to me by the K-12 science department when I was leaving Eddyville-Blakesburg High School (nine years ago), to teach in Oskaloosa. The plaque reads:*

*One hundred years from now  
it will not matter  
what kind of car I drove,  
what kind of house I lived in,*

*how much money I had in my bank account,  
nor what my clothes looked like.  
But the world may be a little better  
because I was important  
in the life of a child.*

*(author unknown)*

*I am proud to say these words exemplify the attitude of many fine science teachers I know. Although these words describe my initial outlook when I began teaching, I have found myself embracing this attitude more and more as I age, and I am in agreement with Mike Clough that aging causes us to be “far less concerned about what others might think about us” and more concerned with being important in the lives of others. So to echo Mike, teaching is truly a sacred activity. I salute you teachers who are making a difference in the lives of your students.*

*In conjunction with this concept, one of the goals of the IAS is to “Improve instruction in the sciences”. One way that ISTS strives to accomplish this goal is by presenting the Iowa Science Teachers Conference each Fall.*

*I urge each of you to attend this science conference, which will be held WEDNESDAY, October 18, 2006 at the Crowne Plaza Five Seasons Hotel in CEDAR RAPIDS, Iowa. What an excellent opportunity to hear and see what other teachers are doing in their classrooms. Even better yet, besides being a spectator, I urge you to also be a presenter. Everyone reading this message has some area of expertise that they should be willing to share.*

*It is my belief that we should be willing to help each other become the best teachers that we can be. We are all enriched when others share with us. How rewarding to know that we have directly enriched another teacher, and indirectly their students.*

*I have come away from every single Fall Science Teachers Conference with some new idea or approach that I can implement into my own classroom teaching. I look forward to seeing each of you at the 2006 Fall Conference in Cedar Rapids. As president of ISTS, please let me know if I can help you in any way.*

Gale Vermeulen  
President ISTS  
2006-2007

# Announcements:

## • Present at the 2006 Fall Conference of the Iowa Science Teachers Section (ISTS)

The Presentation Proposal Submission Deadline has been *extended* to **Friday, June 30th!**

The Iowa Science Teachers Fall Conference is on **Wednesday, October 18, 2006** at the Crowne Plaza Hotel in Cedar Rapids. If you would like to make a presentation, please complete the on-line submission form at <http://ists.pls.uni.edu/secure/fall-conf/present/index.html>.

*Your proposal is submitted with the understanding that:*

- All presenters **MUST REGISTER** for the conference and will be required to pay a **REDUCED REGISTRATION FEE** when Final Program information is confirmed late in the summer. **Failure to register for the conference by the presenter registration date will result in your presentation being removed from the final program.**
- All presenters will conform to typical safety guidelines.
- The reduced registration fee will be available to no more than **TWO** presenters listed for a session.
- The first presenter listed will be considered the **PRIMARY PRESENTER** and communications regarding this proposal will be sent to that person **ONLY**.

*If you have any questions, please contact Danny Bergman at [dbergman@iastate.edu](mailto:dbergman@iastate.edu).*

## • Every Learner Inquires (ELI)

The first statewide science initiative, "Every Learner Inquires" (ELI) will kickoff on July 31, 2006 at Jester Park in Granger, Iowa. Close to 200 K-16 educators will be participating in a four day summer institute that will focus on inquiry-based teaching strategies. Eleven AEA Leadership teams have been formed that include science consultants, curriculum directors, K-12 science teachers, administrators, higher ed, and urban 8 representatives. They will go through two years of intensive training on inquiry-base teaching, and then take a leadership role in rolling out the ELI initiative in schools and school districts their respective regions. In addition to the 11 AEA teams, four Case Study Schools have been identified that will be involved in implementing inquiry-based strategies and collecting data during the four years of the ELI initiative. For further information, contact Dr. Tony Heiting at the address below.

W. Tony Heiting, Ph.D.  
State Science Consultant

Iowa Department of Education  
Grimes State Office Building  
Des Moines, Iowa 50319  
Tel: 515-281-3249  
Fax: 515-242-6025  
E-Mail: [Tony.heiting@iowa.gov](mailto:Tony.heiting@iowa.gov)

## • **The Space Place: Why is the Sky Blue?**

We now have a wonderful new kid-accessible explanation of why the sky is blue -- on our Scijinks web site at <http://scijinks.gov/weather/howwhy/bluesky/>

Why is the sky blue? Why does the sky sometimes turn red at sunset? Every curious child will ask these question at some point. Are you ready to give scientifically correct and simple answers? Visit Scijinks to refresh your memory. The Scijinks Web site targets young people of middle school age. It is a joint effort of the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA).

## • **Leaving IBM To Teach**

“After more than three decades at IBM, Larry Leise and Susan Luerick could be planning a leisurely retirement. Instead, the married couple are headed back to college, with plans to start new careers in retirement as high school science teachers . . . And their bosses at International Business Machines Corp. are only too happy to help.” Sixty-five IBM employees (out of a planned 100) are taking advantage of the IBM pilot program that allows employees to become teachers; read more in this Associated Press article (<http://www.courant.com/business/hc-ibmteachers.artapr24,0,1689246.story?coll=hc-headlines-business>)

## • **TIMSS Video Study of 8th Grade Science Classes**

A video study of eighth grade science classrooms in the United States and four other countries found that U.S. teachers focused on a variety of activities to engage students, but not in a consistent way that developed coherent and challenging science content. In comparison, classrooms in four other higher-achieving countries—Australia, the Czech Republic, Japan, and the Netherlands—exposed eighth graders to science lessons characterized by a core instructional approach that held students to high content standards and expectations for student learning.

The National Center for Education Statistics in the U.S. Education Department's Institute of Education Sciences released these and other findings in a report titled *Teaching Science in Five Countries: Results From the TIMSS (Trends in International Mathematics and Science Study) 1999 Video Study* that draws on analysis of 439 randomly selected videotaped classroom lessons in the participating countries. To view the reports and for more information, visit <http://nces.ed.gov/timss>.

A second report released by NCES compares science content in the National Assessment of Educational Progress (NAEP) 2000 and TIMSS. To download, view, and print the publication as a PDF file, please visit: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006026>

## • Iowa Waste-Related Lesson Plans

**University of Northern Iowa Waste-Related Lesson Plans, Books and Other Educational Resources:**

Go to <http://www.uni.edu/ceee/wastereduction> for lesson plans about waste issues, a bibliography of environmental books and other environmental education information. Much of the information is targeted for middle level educators, but adaptable to all grade levels.

Information about upcoming graduate credit teacher training workshops may also be found at this site. For additional information, contact Susan Salterberg at [salterberg@uni.edu](mailto:salterberg@uni.edu) or 319-337-4816.

## • Laser Info from The Space Place

Many highly useful devices are based on lasers. Lasers can be used to play music or movies, read inventory codes on objects, cut through everything from fabric to solid steel, and perform exquisitely delicate surgery. Laser energy is a form of light, but what makes it different from ordinary light? The latest "Amazing Fact" on The Space Place describes step by step the basic properties of natural light and the special properties of laser light. Interactive animations demonstrate the concepts in fun ways. Visit <http://spaceplace.nasa.gov/en/kids/laser> to get a laser-sharp understanding of this form of energy and to find out how lasers can help to find life on other planets.

- **Clean Water for the 21st Century**



**Wyland Ocean Challenge**  
CLEAN WATER FOR THE 21ST CENTURY...AND BEYOND

**NOW AVAILABLE TO NEWSPAPER-IN-EDUCATION PROGRAMS NATIONWIDE  
THROUGH HOLLISTER KIDS**

The Wyland Ocean Challenge, *Clean Water for the 21st Century*, art and science program was introduced to science teachers from across the country at the National Science Teachers Association Annual Conference in Anaheim, California this past April. In the month since, we have received excellent feedback and excitement from teachers of all grades and academic settings. The combination of teacher feedback and involvement along with the support of our partners, including the Scripps Institution of Oceanography at UCSD, the Birch Aquarium at Scripps, and NOAA, has made the program the most comprehensive art and science program to date.

**If you would like the Wyland Ocean Challenge provided FREE to schools in your area, contact the Newspaper-in-Education department at your local newspaper to request it.**

For more information about the Wyland Ocean Challenge, visit our website at [www.wylandoceanchallenge.org](http://www.wylandoceanchallenge.org).

Warmest regards,

**Jennifer Martin**

Wyland Worldwide  
5 Columbia  
Aliso Viejo, CA 92656  
(949)643-7070 ext. 269  
Fax (949)643-7099  
[www.wylandfoundation.org](http://www.wylandfoundation.org)  
[www.wylandoceanchallenge.org](http://www.wylandoceanchallenge.org)

## • NASA SPACE PLACE

### Who Wants to be a Daredevil?

By Patrick L. Barry and Dr. Tony Phillips

When exploring space, NASA naturally wants to use all the newest and coolest technologies-artificial intelligence, solar sails, onboard supercomputers, exotic materials.

But ‘new’ also means unproven and risky, and that could be a problem. Remember HAL in the movie “2001: A Space Odyssey”? The rebellious computer clearly needed some pre-flight testing.

Testing advanced technologies in space is the mission of the New Millennium Program (NMP), created by NASA's Science Mission Directorate in 1995 and run by JPL. Like the daredevil test pilots of the 1950s who would fly the latest jet technology, NMP flies new technologies in space to see if they're ready for prime time. That way, future missions can use the technologies with much less risk.

Example: In 1999, the program's Deep Space 1 probe tested a system called “AutoNav,” short for *Autonomous Navigation*. AutoNav used artificial intelligence to steer the spacecraft without human intervention. It worked so well that elements of AutoNav were installed on a real mission, Deep Impact, which famously blasted a crater in Comet Tempel 1 on July 4, 2005. Without AutoNav, the projectile would have completely missed the comet.

Some NMP technologies “allow us to do things that we literally could not do before,” says Jack Stocky, Chief Technologist for NMP. Dozens of innovative technologies tested by NMP will lead to satellites and space probes that are smaller, lighter, more capable and even cheaper than those of today.

Another example: An NMP test mission called Space Technology 9, which is still in the planning phase, may test-fly a solar sail. Solar sails use the slight pressure of sunlight itself, instead of heavy fuels, to propel a spacecraft. Two proposed NASA missions would be possible only with dependable solar sails-L1 Diamond and Solar Polar Imager-both of which would use solar sails to fly spacecraft that would study the Sun.

“The technologies that we validate have future missions that need them,” Stocky says. “We try to target [missions] that are about 15 to 20 years out.”

A menagerie of other cool NMP technologies include ion thrusters, hyperspectral imagers, and miniaturized electronics for spacecraft navigation and control. NMP focuses on technologies that have been proven in the laboratory but must be tested in the extreme cold, vacuum, and high radiation environment of space, which can't be fully recreated in the lab.

New NMP missions fly every year and one-half to two years, taking tomorrow's space technology for a daredevil test drive.

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

## Opportunities:

### • Greetings from the M/V River Cleanup!!

Hope you all are doing well and that 2006 has been off to a good start for you. All of us at Living Lands & Waters are gearing up for another great season of workshops taking place aboard our tug, garbage barges, and floating classroom!

I am writing this email to notify you in regards to our upcoming 2006 Midwest Workshop Schedule. We are doing some VERY EXCITING and new workshops this year, including 3 and 4 day river expedition trips, this season that I am sooooo stoked about! Teachers and nonformal educators will actually get to travel with our barges as we head up river from St. Louis, MO to Hannibal, MO. And then again from Hannibal, MO to Burlington, IA. All of our workshops this year will focus on the ecology of the river but will also discuss ways to use the river as an integrating concept to teach ALL disciplines! All of workshops are offered for FREE (except those attending the expedition trips must pay for lodging) and classroom-ready materials will be given to all who participate! Most workshops also offer professional development units and some even graduate credit.

If you are interested in more information or to register, please refer to our website at: <http://www.livinglandsandwaters.org/EducationalWorkshops/default.htm>

If you have any questions, please just email or call me at the numbers listed below. Until then, take care of yourself and the river,

Tammy Becker

Education Coordinator  
Living Lands & Waters  
17624 Route 84 North  
East Moline, IL 61244

309.236.0725-Primary #  
309.496.9848-Secondary #  
<<http://www.livinglandsandwaters.org>>

## ● **UM CyberCamp for High Schoolers**

**The CyberCamp at the University of Minnesota at Crookston will be a 4-day, residential program on the UMC campus devoted to teaching High School students about the math and physics used to simulate nature in modern computer games. The camp will run from June 18-22, 2006 and we hope to have about 25 participants. Total cost, including room, board, laptop rental, and everything except transportation, will be \$300.**

**Computer games provide a unique opportunity to interest students in math and physics. They are phenomenally popular, very cool and very "hip", yet are obviously fundamentally computer programs that simulate the natural world. Students are very curious about their games; how do they work and how do you make one are great topics for high schoolers. Games are an excellent "hook" into teenagers, they're familiar and comfortable, they're fun to make and to play, and yet you have to know some pretty sophisticated math to make them work. Designing games is a very hands-on, fun and intriguing way to learn math and physics.**

**More information is available at**

**<http://www.umcrookston.edu/camps/cybercamp.htm>, or just email me, Pete Border, ([border@mail.physics.umn.edu](mailto:border@mail.physics.umn.edu)) or David DeMuth ([demuth@umn.edu](mailto:demuth@umn.edu)). We would be delighted to send you as many copies of the brochure as you want (or you can download it yourself from [http://www.umcrookston.edu/camps/documents/pdf/cybercamp\\_brochure2006\\_web.pdf](http://www.umcrookston.edu/camps/documents/pdf/cybercamp_brochure2006_web.pdf))**

- **Conference for teachers promoting best practices in teaching science, technology, engineering, and mathematics**

The Center of Excellence for Women, Science and Technology at the College of St. Catherine is inviting teachers across the upper Midwest to attend a special two-day conference on promoting best practices in teaching science, technology engineering and math (STEM). ***The Why the Difference? conference will be held on Tuesday, June 27 and Wednesday, June 28th, 2006 at the college's St. Paul campus.*** Information on the conference is available at the website of the Center for Women, Science and Technology, <http://minerva.stkate.edu/sciencetech.nsf>, or by contacting [cwst@stkate.edu](mailto:cwst@stkate.edu).

The Why the Difference? conference addresses the fact that women choose STEM majors at less than half the rate men do. The reasons women aren't choosing scientific and technical careers seem to be more related to engagement-passion for the subjects-and social issues than achievement. Across high schools, there are still some small differences between boys' and girls' scores on National Assessment of Educational Progress tests and college entrance exams, but they are not major. Also, girls take about the same course load as boys do. Women are capable of entering into STEM college majors at the same rate as men, but don't.

For more information contact:  
Julie Michener, Media Relations Manager  
651-690-6521, 651-253-8931

- **AEROLAB**

The ALCOA Foundation and the Iowa Academy of Science present:

**A Hands-On, Inquiry-Based Workshop in Conceptual Physics and Physical Science for Middle School and 9th Grade Teachers**

Saturday, September 23rd, 2006, at the Putnam Museum, Davenport, Iowa

Flight has always been a topic of intense curiosity, offering opportunities for great student interest. AeroLab lessons feature simple foam and balsa aircraft as tools to teach force and motion, allowing students to practice important math skills to determine average speed and acceleration. All labs are geared to Iowa's Every Child Inquires Initiative. Participants will build and fly a model aircraft suitable for use in middle school physical science classrooms – with lessons and materials provided – you can begin on Monday!

Join us for this one-day workshop at the Putnam Science Center, on Saturday, September 23rd, from 8:30 a.m. to 3:30 p.m. Teachers will participate in several inquiry-based, hands-on lessons, using simple flying machines to illustrate basic concepts in the physical sciences. The labs will feature conceptual activities in the physical sciences, providing opportunities for students to form hypothesis, collect data and graph results, as well as participate in activities designed for directed and guided inquiry. The lessons are written

by science teachers /for /science teachers; participants will have an opportunity to help evaluate the effectiveness of the activities, to increase student achievement.

This workshop also may be useful for any high school science teacher seeking engaging lessons in conceptual physics.

### **Program Highlights**

- **No Registration Fee**
- **Participants will receive all classroom materials for each student**
- **Teachers receive a stipend, upon completion of the lessons and an interview with a project evaluator.**
- **Meets several Iowa Teaching Standards and Model Criteria. Leave with artifacts for your portfolio!**
- **30-participant limit; priority given to teams of teachers from the same school**
- **Morning snack and lunch is provided**
- **Registration Deadline: September 8th, 2006. Space is limited so register soon!**

The Alcoa Foundation, the Iowa Academy of Science and Exploration and the Academy of Model Aeronautics are sponsoring this workshop because of their commitment to increase “hands-on, minds-on,” inquiry-based learning in science for middle and high school students. A major goal of the project is to establish “best practices,” in easy-to-use lessons that are fun for students, teaching conceptual physics using flight as the tool. To this end, participating teachers are asked to help gather data about lesson effectiveness.

Teachers must agree to implement several selected AeroLab lessons by the end of the current school year (including student testing) and to be interviewed by an evaluator, to help assess and refine the program. As a “thank you” for helping with the program review, a stipend of \$100 is offered, once each participant has completed an exit interview with a local evaluator of the project. Workshop participants also are provided with over \$250 of curriculum and classroom materials, as well as on-line support while completing the projects, including student assessment. If you have questions concerning these expectations, contact Gordon Schimmel, Ed.D., <[AeroLab@mansfieldct.org](mailto:AeroLab@mansfieldct.org)>.

To register, please contact <[iowawet@sunny.uni.edu](mailto:iowawet@sunny.uni.edu)>, and provide all necessary information requested on the form below or mail to IAS, 175 Baker Hall, Cedar Falls, Iowa 50614-0508. Registration will be confirmed by return email. For additional information and driving directions to the Putman Museum visit: [www.iacad.org/flight.html](http://www.iacad.org/flight.html).

\*REGISTRATION\*

Name: \_\_\_\_\_ Home phone (\_\_\_\_\_) \_\_\_\_\_

Address: \_\_\_\_\_ ZIP: \_\_\_\_\_

School: \_\_\_\_\_ Grade(s) \_\_\_\_\_

Email address \_\_\_\_\_

## • Study Symbiosis through BU

I am again offering my graduate Symbiosis course on line this summer through Boston University.! I have been teaching it for nearly twenty years on campus in the Fall and last summer initiated it in collaboration with the International Symbiosis Society as an extraordinary on-line version.

Symbiosis is a wonderful life and earth science curriculum unifier.! Students of all ages tend to be intrigued with symbiosis, particularly as they realize that it is a central part of how life on earth has evolved and remains successful. Key symbiotic systems include coral-dinoflagellates which build reefs, lichens, mycorrhizae fungi with plants, insect symbioses, nitrogen fixation, ruminants and their microflora, grasses and their associated fungi, deep vent organisms, and others. Moreover, our own mitochondria and plant chloroplast origins illustrate the great importance of symbiosis on earth.

The course is offered on-line from June 26 through August 3.! It is asynchronous, in that it can go online at any time as part of assignments, discussion, and so on, albeit of course there are regular deadlines so that everyone stays together as we move on through a wide assortment of fascinating themes.! While Boston University is not inexpensive, this four credit course, CAS Bi 501 OL Symbiosis, is offered at a much lower rate in the summer than during the academic year.! And, in this case, one can gain the credit/professional development from the convenience of home, the beach, wherever.! Of course, this course can be transferred into programs of other schools of higher education.! And, for those who are interested, the course can become the starting point for a part-time on-line-based Masters of Natural History Education.! This program features 6 courses to be offered on-line and three on-campus (during a summer) on a one-course per semester basis.

For summary course description, costs, please access:

<http://www.bu.edu/summer/visiting/courses/biology.shtml>

To register, please access:

<http://www.bu.edu/summer/visiting/registration/index.shtml>

Also, for more specifics, feel free to contact me at [dzook@bu.edu](mailto:dzook@bu.edu). If you are interested in hearing from others who have taken the course, I'd be happy to send you their e-mails and you can get their perspectives/feedback if you wish. Thank you, and I hope to see many

of you on-line this summer...

Douglas (Zook)  
Professor of Science Education and Biology  
President, International Symbiosis Society  
Boston University

## *Your ISTS Leadership:*

### **Iowa Academy of Science Goals:**

- Promote research in the sciences
- Promote public understanding of science
- Improve instruction in the sciences
- Disseminate scientific knowledge
- Recognize high achievement in science and science teaching

**To attain these goals throughout the state of Iowa.**

Check out past issues of the ISTS newsletter at  
<<http://ists.pls.uni.edu/newsletters/index.html>>.

Your ISTS Leadership Team can be found at:  
<<http://ists.pls.uni.edu/officers.html>>.

(We are always looking for good people. Send an e-mail to  
[vermeuleng@oskaloosa.k12.ia.us](mailto:vermeuleng@oskaloosa.k12.ia.us) if you wish to be more involved.)

Invitation to improve/contribute to this newsletter. How best can this newsletter serve you? Do you have something to contribute for the good of the ISTS membership? Zing a line at [mclough@iastate.edu](mailto:mclough@iastate.edu) or [nweirather@central-lee.k12.ia.us](mailto:nweirather@central-lee.k12.ia.us).