SPECTRUM

Fall 2008, Vol. 34, No. 2

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The Journal of the Illinois Science Teachers Association

In this Issue:

Plan Ahead:
ISTA Conference 2008 - November 13-15, 2008

Spectrum

The Journal of the Illinois Science Teachers Association
Volume 34, Number 2

Spectrum is published three times per year, in spring, fall, and winter, by the Illinois Science Teachers Association, Illinois Mathematics and Science Academy, 1500 W. Sullivan Rd., Aurora, IL 60506. Subscription rates are found with the membership information. *Subscription inquiries should be directed to Sherry Duncan (email:* sjduncan08@comcast.net*).*

Send submissions and inquiries to the editor. Articles should be directed to individual area focus editors (see next page and *write for the SPECTRUM information).*

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Cover photo - Preying Mantis - courtesy of Ovid Wong.

The *Spectrum* is printed on recycled/recyclable paper

SPECTRUM

The Journal of the Illinois Science Teachers Association

Fall 2008 Volume 34, Number 2

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Jill Carter

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Greetings Fellow ISTA Members!

The ISTA board is busy developing our new strategic plan. We met in June at Rend Lake to plan for the future. Here is a sampling of the changes we have in store:

- In the coming months you'll see that information on our website will be more current.
- We are investigating the costs of online voting for future elections as well as online registration for our annual conference.
- Our membership brochure is being updated.
- We are making plans for a new incentive program for our current members to recruit new members.
- We are looking for ways to expand professional development for our membership.
- A formal process is being developed as ISTA looks to develop partnerships with organizations and other entities.
- Regional directors want to hear from you, our members. We applaud your commitment to our professional organization and we look to your guidance as we continue to plan for the future. We'll be developing some online surveys in order to get your input. We are also considering the use of focus groups as we chart ISTA's pathway. In the meantime, please call, email, or write your regional director. Their contact information is on our website and can be found in every issue of the *Spectrum*.

Would you like to be more involved in ISTA? Please consider running for office in our organization. This year we will be electing regional directors, along with the positions of president-elect, vice president, and secretary. How do you get on the ballot? It's simple, just contact Ray Dagenais, our immediate past president, or your regional director for more information.

Our fall conference, "A Future in Science Starts Now," in Peoria is fast approaching. The preconference is scheduled for Thursday, November 13. We have plans to address the coming Year of Science along with critical technologies our students will need in their adult lives. The main conference begins Thursday evening with the opening of the Exhibit Hall along with complementary snacks and drinks at 4:00. Charles Darwin, Abraham Lincoln, and others will be on hand to help us announce 2009 as the Year of Science. They will also be present at the Friday luncheon. Friday will also be filled with fabulous presentations. Make plans to visit our vendors in the Exhibit Hall as well. The NSTA bookstore will be returning this year. Be sure and stop by. We'll have many of NSTA's publications for sale. Buses will take us to Lakeview Museum for our Gala in the evening. We're planning an expanded menu for

dinner this year along with admission to the museum gallery, planetarium, gift shop, laser light shows, and dancing to music by the Groove Daddies! Buses will return you to the Hotel Pere Marquette. To wrap up the conference on Saturday, we'll have our annual membership meeting followed by one, two, and three hour workshops on a variety of topics. You won't want to miss these! Check our website for more information and watch for announcements via the listserve, ISTA-talk.

Best wishes,
Jill

ISTA President Jill Carter presented Ken Rosenbaum with a certificate of appreciation for his leadership. Highlights of the strategic plan will be discussed at the Annual ISTA meeting and posted when finalized.

Following the very productive board meeting, President Jill Carter and President Elect Gwen Pollock delegated Executive Director Harry Hendrickson to get the wheels turning.

President Jill Carter presented IPRB Executive Director Charles Williams with a certificate of appreciation for five years of support of the medallion program, stating that the partnership with IPRB provided for a very successful student recognition program. ISTA members can request a free Olympic Style Medallion for presentation to an outstanding science student. Last year about seventy medallions were presented at various award ceremonies throughout Illinois.

Do *You* Know an Exemplary Science Student?

Remember, ISTA members in good standing, who would like to honor one high school science student each year, may request an **ISTA medallion and certificate** by contacting sjduncan08@comcast.net.

This award program is supported by contributions from the Illinois Petroleum Resources Board.

2007-09 ISTA Executive Committee

Vice President
Donna Engel
Minooka Community HS
dengel@mchs.net

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gpollock@casscomm.com

Treasurer
Bob Carter
carter@niu.edu

Past President
Raymond Dagenais
Illinois Mathematics
and Science Academy
rjdag@imsa.edu

2007-09 ISTA Committee Chairs

Archives	Maurice Kellogg
Awards	
Convention	Executive Director
Convention Program	Donna Engel
Finance	Vice President - Donna Engel
Membership	Donna Engel
Nominations and Elections	Past President – Ray Dagenais
Public Relations	Tom Kearney
Professional Development/Building a Presence	Mary Lou Lipscomb
Publications Committee	Judith A. Scheppler

2008 Rookie of the Year Awardees

Michael Avara - Pontiac Jr. High School, Waterloo, IL - seventh and eighth grade science
Tara McDonald - Minooka Intermediate School, Minooka, IL - sixth grade science
Rachel Stuart - Mattoon Middle School, Mattoon, IL - eighth grade science
Andrea Pavlik - Wilder Waite Grade School, Peoria, IL - third grade
Mindy Waters - St. Joseph-Ogden High School, St. Joseph, IL - high school chemistry

Regional Directors

Region 1 Director 08-10
Lynne Hubert
Joseph Sears School
lhubert@kenilworth38.org

Region 1 Director 07-09
Nicol Christianson
Rotolo Middle School
Nicol.Christianson@bps101.net

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Region 4 Director 07-09
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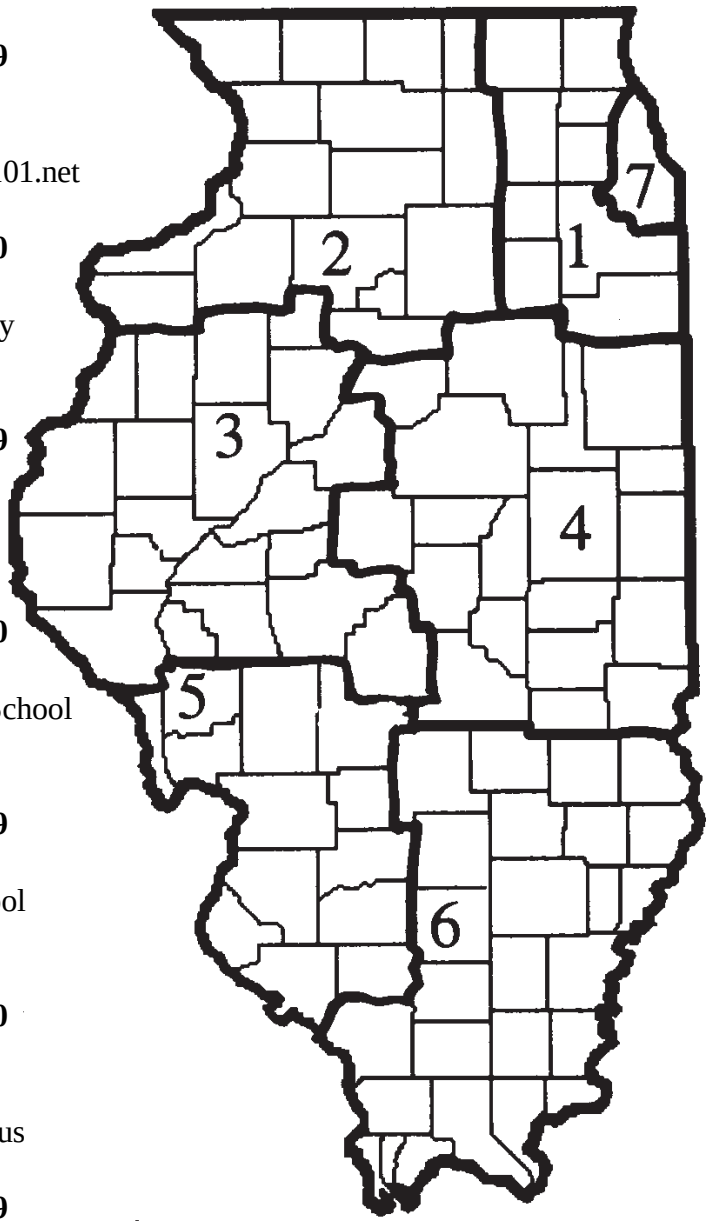
tsimpson@watseka-u9.k12.il.us



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Southern Illinois University
tfoster@siue.edu

Region 5 Director 07-09
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kacoste@siue.edu

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Region 6 Director 07-09
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Region 7 Director 07-09
Denise Edelson
Hannah G. Solomon School
dnedelson@cps.k12.il.us

http://www.ista-il.org/

Illinois Science Teachers Association

2008 Membership Application

Please print or type and fill-out complete form

_____ Name	_____ Day Phone
_____ Affiliation (School or Organization)	_____ Home Phone
_____ Address of Above Organization	_____ Home Address
_____ City, State, Zip Code	_____ City, State, Zip Code
_____ Email and/or Fax	_____ County in Illinois/ ISTA Region (see map)

Check Applicable Categories in Each Column

O Elementary Level
O Middle Level
O Secondary Level
O Community College
O College/University
O Industry/Business/ Government
O Other_____

O Elementary Sciences
O Life Science/Biology
O Physical Sciences
O Environmental Science
O Earth Science/Geology
O Chemistry
O Physics
O General Science
O Integrated Science
O Other_____

O Teacher
O Administrator
O Coordinator
O Librarian
O Student
O Retired

Send form and check or money order, made payable to Illinois Science Teachers Association, to: Sherry Duncan (email: sjduncan08@comcast.net), ISTA Membership, PO Box 295, Urbana, IL 61801.

Membership Option (see below)_____ FFSEMembership Yes/No _____ Amount Enclosed _____

ISTA Membership Categories

Option 1: Full membership dues - $35.00. Full membership entitles individuals to the following benefits: a one year subscription to the *Spectrum*; inclusion in the members-only ISTA-TALK listserv; notification of regional conferences and meetings; voting privileges; and the opportunity to hold an ISTA officer position.

Option 2: Two-year full membership dues - $60.00. Two-year full membership entitles member to full membership benefits for two years.

Option 3: Five-year full membership dues - $125.00. Five-year full membership entitles member to full member benefits for five years.

Option 4: Associate membership dues - $15.00. For full-time students and individuals who are on retirement status. Entitles member to full menbership benefits, with the exception of the opportunity to run for office.

Option 5: Institutional membership - $75.00. Institutional membership entitles the member institution, for a period of one year, to two subscriptions to the *Spectrum*; notification of regional conferences and meetings, and a reduced registration fee for the annual ISTA conference for a maximum of three members of the institution.

Fermilab Friends for Science Education (FFSE): Thanks to an ISTA-FFSE board agreement, for Options 1, 4, and 5, teachers may receive a regular $10 membership in the FFSE for an additional $4.
See http://ed.fnal.gov/ffse/ for membership details.

Welcome This New Opportunity: Joint Membership FFSE and ISTA

Fermilab Friends for Science Education
Reaching Out to Bring Science to Students, Teachers, and Families

Fermilab Friends for Science Education exists to create and support innovative science education programs. FFSE continues to fulfill its mission by:

* Enhancing the quality of precollege science education in public and private schools.
* Encouraging young people to pursue careers in science and engineering.

FFSE supported over 30,000 students and 2800 teachers last year. Visit us at: http://ed.fnal.gov/ffse

From President Elect, Gwen Pollock

I just wanted to report on the latest work of your ISTA board, the planning for our upcoming conference in Peoria, and continuing efforts for 2009: Illinois Year of Science. I am so excited about these prospects and want to encourage you to become a part of our planning and learning together.

The board worked this summer on a significantly more focused strategic plan for our organization, with goals that will expand our membership, professional development, partnerships, and advocacy efforts. We had a grand time with Ken Rosenbaum, from NSTA, really making hard decisions about how we must move forward as an organization. I am really excited about our plans. More will be shared with you soon.

2009 - Year of Science

The piece that I have been working on more diligently is an innovative and extensive effort which will be tied to special Illinois opportunities celebrating 2009 as the Illinois Year of Science. To check out the national Year of Science plans, you can explore http://www.copusproject.org/yearofscience2009 from the Coalition on the Public Understanding of Science. We are already working on planning monthly activities throughout the state for teachers of science to celebrate our heritage and future. We will be announcing the full spectrum of our plans and partners at our Peoria Conference, whose theme has been appropriately titled "A Future in Science Starts Now."

First Nuclei of ISTA 2009: Year of Science Plans

ISTA members are essential to the extraordinary success of the Illinois Year of Science. Each of the nuclear ideas will require your emerging leadership skills and creative input. For each of the ideas, we are including the starter requests for your assistance to make them more successful.

Our first three nuclear ideas; others will emerge as we proceed…..

- Organizing monthly *Local Extravaganza* opportunities throughout the state for you (and possibly for your students) to focus on the latest research, new resources, and interesting settings for science teaching and learning.
- Working on the ideas of *Intriguing Science and Intriguing Photography* for local exhibits of intriguing science photography from your students.
- Working on the ideas for a state-to-local level of *Sciency Book Review Clubs* for you, your students, your colleagues, and/or your community. We are planning to provide copies of the recently released *Ready, Set, Science!* from the National Research Council to the first fifty ISTA members who sign up for our book club. The book club will have online and face-to-face conference opportunities. Contact me directly about this offer.

For the Local Extravaganzas (now that the title has enticed you!)

We'll be looking for scientists and engineers in all sorts of fields, from all sorts of Illinois businesses and industries to share their professional passions for science. These will be posted on the ISTA web page so that you can see what can fit into your busy schedules. The scope of the opportunities is very diverse. It can include tours, seminars or lecture series, informal discussion groups, etc. for after-school or Saturday settings at locations near you, around the state. The settings may include both K-12 students and their teachers, but the primary focus will be our teachers of science, so that they can extend their own horizons and apply to their classrooms. Do you know of potential ISTA partners? Are there special kinds of settings that are really interesting to you and that you want us to pursue opportunities in?

For the Intriguing Science and Intriguing Photography Nuclear Idea:

We are in the earliest stages of working with the Illinois Arts Council to pursue a special science and photography project. At this point, the project is sketchy (pun intended!) Regional Arts Council talents will be enlisted to help teachers of science and art to incorporate photography into creative learning in science. Hopefully, teachers and their arts council counterparts will be able to arrange for creative exhibits of the photographic diversity of science. Do you have the photography bug already?

For the Sciency Book Review Clubs Nuclear Idea:

Perhaps you know about Oprah's Book Club or the Chicago Public Library project which is essentially a massive book review club, whereby the whole community is invited to read an assigned book and meet together virtually or personally at city-wide public libraries to discuss that book. We are proposing options of books for audiences of students at different grade levels and interested adults, teaching colleagues - reading histories of sciences, science fiction, special research topics, and so forth. We would like to work with school libraries, local public libraries, reading and literature teachers, K-12. Plus the offer for the *Ready, Set, Science* book mentioned above. Do you try to integrate reading into your classroom?

How can you get involved?

- Do any of these ideas appeal to you?
- Are you an organizer?
- Do you know people who know people?
- Do you have ideas?
- Would you become a part of the state planning team for any of these activities?

Contact Gwen Pollock (gpollock@casscomm.com) if you are interested, if you want to help, if you have even better ideas. We need your creative genius and passionate dedication for teaching and learning science in Illinois!

Join the ISTA listserve to Network Online!

ISTA encourages all of its members to join the list serve of our organization. News of timely value and networking opportunities are posted regularly. Safeguards have been incorporated to protect you from unneccessary electronic intrusions. Please send Harry Hendrickson (hrhendrickson@comcast.net) a simple note with your email in the body of the note and the wording on the subject line: please add me to the ISTA list serve.

ISTA / ExxonMobil Outstanding Teacher of Science Awards Program

The Illinois Science Teachers Association with the generous support of ExxonMobil announces the 2008 - 2009 ISTA / ExxonMobil Outstanding Teacher of Science Awards Program. Applications will be accepted from K – 8 teachers of science who have demonstrated extraordinary accomplishment in the field of science teaching. These accomplishments are intended to be something that goes beyond the classroom and enriches the lives of students. Examples include personal or community-wide achievement which is science related (grants for the school, working on environmental projects, and so forth). It could be working with other teachers or community members to develop a product or process related to science education. It could also be the creation of a science group at the school which enriches and extends beyond the school day.

The 2008 – 2009 program consists of seven one thousand dollar prizes. One $1000 award will be presented to one K – 8 teacher of science from each of the seven ISTA regions in the state of Illinois.

The awards are intended to recognize extraordinary accomplishment in the field of science teaching. Applicants must provide evidence that demonstrates accomplishments that go beyond normal classroom teaching.

Criteria for consideration include:

1. Current ISTA membership
2. Full time teaching assignment
3. Teaching assignment in the ISTA region for which application is submitted
4. Written narrative (maximum of 500 words) describing the teacher's extraordinary accomplishments in the field of science teaching
5. Evidence that supports the teacher's description of extraordinary accomplishments in the field of science teaching
6. Two letters of support from individuals who can attest to the impact of the extraordinary accomplishments in the field of science teaching
7. A completed application form with required supplementary materials submitted by March 6, 2009 to:

Harry Hendrickson
218 Cumberland Drive
Rochester, IL 62563
Email: hhendrickson@insightbb.com
Phone: 217-498-8411
Cell: 217-341-5037

Winners will be notified by April 15, 2009.

For more information contact Harry Hendrickson at hhendrickson@insightbb.com

2008-2009 ISTA/ExxonMobil Outstanding Teacher of Science
Awards Application Form
Application Due Date March 6, 2009

ISTA Region:_____

Name:_____

Position (grade and subject taught):_____

School Name/Address:_____

_____

School Phone Number:_____

Email address:_____

Home Address:_____

_____

Home Phone Number:_____

I hold 2009 calendar year membership in ISTA: _____

I certify that the information provided in this award application is true and accurate.

Signed:_____ Date: _____
(Applicant)

2007-08 ISTA/ExxonMobil
Outstanding Teacher of Science Awards

Region 1: Keetra Tipton

Keetra teaches seventh and eighth grade science at Park View School in Morton Grove. She began her career as a substitute teacher in Madison, Wisconsin and joined the faculty at Park View in 2004. She became the head coach for a Science Olympiad team, which has been to state competition each year. A colleague writes, "Few people, beyond her students, who enjoy her unique talents, effective instructional approaches, and passion for teaching, are aware, however, of her critical contributions to the larger science education research community." In 2004-05 Keetra collaborated with researchers at the Concord Consortium, Harvard University, and Northwestern University on an early pilot evaluation of *Connected Chemistry*. The following year she collaborated with the University of Illinois on two National Science Foundation curriculum projects. This year and last year, she was invited to provide a teacher training workshop at the University of Michigan for the Investigating and Questioning Our World through Science and Technology (IQWST) curriculum. Keetra states, "Because of my work, my students know that their ideas and opinions matter." Always the team player, she also states, "This is why I believe I am a part of an extraordinary team of teachers (at Park View School.) Our number one concern is our students and how they learn best."

Region 2: no entries
Region 3: no entries

Region 4: Nancy Totten

Nancy teaches eighth grade physical science and environment lab at Casey-Westfield Junior High in Casey. She began her career as a substitute teacher and aide in the Casey-Westfield district in 1986. For a decade, Nancy has been the director of a Super-Science Day for grades K- 6. She organizes day and night activities for five hundred students. It is a day devoted to doing science for all students. She arranges for speakers and exhibitors throughout the day. Parents and students return for the evening activities, which include demonstrations by her students and others. She has also initiated a recycling program for the junior high school. She will be assisting the high school in starting their recycling program and is currently working with city officials to develop a recycling center for the entire town. She has conducted marine field studies in the Bahamas, authored and administered three C2000 environmental grants with the Illinois Department of Natural Resources, and participated in Project TEAMS at Eastern Illinois University. She has been a designer and teacher for PLAN-IT EARTH at EIU and continues to be an EcoWatch environmental monitor/trainer for the State of Illinois and a presenter/participant for Project STAR at EIU. She has made numerous presentations at local, state, and national science conventions. Stated in a letter of support, "Nancy continues to be a luminary to many in our state by showing them how to accomplish more than they ever thought possible."

Region 4: Kristi Van Hoveln

Kristi teaches science for grades six to eight in Milford. She began her science teaching career there in 2002 and had already become a teacher leader as she also serves as the School Improvement Coordinator. Her superintendent writes, "Although I could discuss more programs and teaching strategies of Mrs. Van Hoveln, suffice it to say she is innovative, energetic, and one of our teacher leaders." The innovations and energy are evidenced by the following, all of which Kristi initiated because *science is a verb!* Science is Cool (SIC) club; It's Not Magic, It's Science Demonstration Show; A Night of Science; and participation in the University of Illinois Engineering Open House

(EOH) Middle School Design Contest. SIC takes a monthly field trip to see occupations using science. By creating a video, eighth graders demonstrate their knowledge of the scientific method and chemistry to fourth and fifth graders in the It's Not Magic, It's Science Demonstration Show. Some of these videos were presented at the Illinois Tech Conference to members of the Illinois State Legislature. Parents, community members, and students are able to participate in the Night of Science. Kristi organized a school-wide competition for the chance to compete at the EOH. Students had to create a cardboard boxcar that could roll down a ramp, carrying a student, with no propulsion system. Her assistant principal states, "She does not let the absence of a science laboratory impede her instruction; rather, she uses the limited classroom environment she has to present stimulating and intriguing lessons." Kristi is also a point of contact for Illinois Building a Presence.

Region 5: no entries

Region 6: Michael Blair

Michael teaches seventh grade life science and eighth grade physical science at Unity Point School in Carbondale. From 1977-85 he taught science in Sparta. Since coming to Unity Point, he had dreamed of developing an outdoor area that could be used as a teaching laboratory. To make that dream today's reality he wrote seven LEAP grants, two Best Buy Teach Awards, and an Ag in the Classroom proposal to gather the necessary funding. He also participated in many programs, such as REVITALISE at the University of Illinois, to gather the skills needed to institute such a science program. This is done outside of his regular classes, as an exploratory program and club activity. Michael writes, "It is during this time that my students have the chance to conduct a real environmental study of a wetland ecosystem. Throughout this entire endeavor, the one thing that is always evident is how well students of different abilities worked with each other in this environment, with the technology allowing them to do things that were impossible just a few years earlier. The creation of 3-dimensional visualizations, while appearing difficult, is accepted eagerly by the students. Bringing in technology that allowed student an opportunity to document and visualize the pond ecosystem presented a real story of learning to work together and ecological change." Michael works with his students outside the school day, as well, on their science fair projects. During the 2006 State Science Exposition, his students achieved nineteen Gold Awards and in 2007, they achieved 16 Gold Awards, with two being Best in Category. He doesn't keep his successful techniques a secret, but shares them with other teachers

Region 6: Jennifer Liss

Jennifer is a fifth grade teacher at Lewis School in Carbondale. She has been teaching since 1994 and joined the Lewis School staff in 2003. Jennifer writes, "…at the elementary level I am responsible for seven subjects a day. I wanted to find more time for science and to work with children outside of my classroom on projects that could be expanded to include our community." Thus began the Energy Patrol Club, which became the Energy Detectives and now is the Lewis School Conservation Kids. Jennifer meets with these students during their recess/lunch time. During the past seven years, the club has had field trips to the landfill, recycling center, and a vermicomposting facility. Students have shared their knowledge by teaching lessons to the entire school. They have designed energy museums and carnivals, performed in a puppet show, and a musical. The club recently organized a waste-free lunch and book swap. In 2001, their project was submitted at the state level, where they won first place in the elementary division. The project was then forwarded to the national competition in Washington, D.C. They won the National Energy Education Development Project's 2001 National Youth Award. One of Jennifer's supporters writes that " ... [through the Conservation Kids] and Jennifer's dedication to promote service learning, these students will be leaders in changing the present and their tomorrow."

A Future in Science Starts Now
2008 ISTA Conference
November 13 - 15, 2008

The 2008 ISTA conference committee is looking forward to an information-packed and fun-filled fall science education conference. The conference theme is "A Future in Science Starts Now." It will be held at the Pere Marquette Hotel and the nearby Peoria Civic Center, November 13-15, 2008.

Exhibitors will include textbook and learning materials publishers, technical equipment manufacturers, science equipment suppliers, museums, government agencies, non-profit educational organizations, service suppliers, and professional organizations. Anyone interersted in purchasing science education supplies can compare competitors and talk directly with company representatives. Many free posters and materials are provided. Also, exhibitors donate thousands of dollars of materials which are raffled off to conference participants.

Breakout sessions and workshops will include physical, life, and Earth/space science topics as well as practical teaching and learning approaches and institutional science issues. An emphasis this year will be on preparing for the 2009 Illinois Year of Science observance.

The Thursday exhibit hall opening, the Friday luncheon, and the Friday night Gala offer exciting and fun opportunities to network with colleagues. Science teachers in training learn about materials, services, and available jobs and are admitted at a low student rate.

We hope to see you there and know that you will be enriched by your attendance!

The 2008 ISTA conference hotel is the Hotel Pere Marquette in Peoria. The Thursday (November 13, 2008) pre-conference session will be held at the Hotel Pere Marquette along with several conference breakout sessions on Friday (November 14, 2008) and Saturday (November 15, 2008). Expect to meet friends and colleagues at one of the many social gathering spots on the premises. The Hotel Pere Marquette is a short walk to the Peoria Civic Center where exhibitors will have all the newest supplies, equipment, and science education resources on display.

Illinois Science Teachers Association
41st Annual Conference on Science Education
Peoria Civic Center & the Hotel Pere Marquette
November 13-15, 2008
Pre-Registration Form

Deadline for Early Bird Pre-Registration: Postmarked by October 11, 2008

Deadline for Advance Registration: Postmarked between October 12, 2008 and November 1, 2008

Registration on or after November 2, 2008: On-site only

Fill out form completely. Print clearly. Information will be used for our records.

Name: _____ Spouse/Guest Name (if attending) _____

Home Address _____ Home phone (_____) _____

City/State/Zip _____ County where you work _____

Affiliation/School _____

Business Address: _____ Business phone (_____) _____

City/State/Zip _____ Email _____

☐ Check here if you need special assistance due to handicap (describe on extra sheet).

☐ Check here if you would like to be a presider for a session.

☐ Check here if you have been teaching 3 years or less.

☐ Check here if you need a non-meat meal.

Pre-Conference Registration (Thursday only)

(Includes Exhibit Preview and Exhibit Hall Preview Reception)

☐ Registration $75 _____

Conference Registration (Friday and Saturday)

(Includes Thursday Exhibit Preview, Exhibit Hall Preview Reception, Friday lunch, & Saturday brkfst.)

Please circle correct amount.

Registration Fees	**Earlybird** 10/11/08	**Advance** 11/01/08	**Full Rate** After 11/1
☐ Current ISTA member	$120	$135	$145
☐ Nonmember (includes one-year membership)	$155	$170	$180
☐ Institutional members (up to 3 individuals) *	$115person	$130/person	$140/person
☐ Full-time student	$30	$30	$30
☐ Saturday only (Exhibit Hall not open)	$65	$70	$75
☐ Non-teaching spouse/guest (no meal)	$15	$15	$15

Enter Registration fee _____

Social Events (Tickets for these events will not be sold at the door)

Thursday Reception in Exhibit Hall (4:00 to 7:00 pm) No charge, but please register $00.00 _____

Friday Luncheon – Hotel Pere Marquette – No charge, but please register $00.00 _____

Friday Night **GALA** (bus, drinks, food, light show, drinks, prizes, awards– open to anyone attending Thursday, Friday, and/or Saturday. **DON'T MISS THIS!** $25.00 _____

Total Due: _____

* Please send all registrations in the same envelope.

Make checks payable to: Illinois Science Teachers Association. Send to **Sherry Duncan, ISTA Registration, P.O. Box 295, Urbana, IL 61801.** No one will be admitted to any part of the convention without registering. If your registration form is received by November 3rd you will receive a confirmation in the mail. If it is received after that date, you may pick up your information at the registration area in the Peoria Civic Center.

2008 ISTA Exhibit Hall Extravaganza

The Peoria Civic Center Exhibit Hall will be open Thursday afternoon, November 13, and all day Friday, November 14. Vendors will be displaying the most current and innovative materials, supplies, and equipment. Prizes will be available for visiting vendor booths. The hours are:

Thursday, November 13, 2008
4:00 PM - 7:00 PM Exhibit Hall Open (*Free finger food and a drink ticket*)

Friday, November 14, 2008
10:00 AM – 5:00 PM PM Exhibit Hall Open
Noon: Luncheon served in the Exhibit Hall

Please spend some time discussing your needs with the vendors and getting new ideas from them.

Hotel Pere Marquette

The Illinois Science Teachers Association has **reserved a limited block of rooms at the Hotel Pere Marquette for conference attendees**. Be sure to mention that you are registered for the Illinois Science Teachers Association conference in order to reserve a room at the special conference price of:

- Single or Double $98.00, which includes breakfast

Room rates are per night and are subject to taxes and applicable charges. Parking is free for registered guests. To reserve a room at the conference rate you must contact:

http://www.hotelperemarquette.com
Reservations only: 1-800-447-1676
Information: 1-309-637-6555

2008 Conference Schedule

(tentative)

Thursday, November 13

Pre-conference -**Illinois' Critical Technologies**

4:00 PM - 7:00 PM - Exhibit Hall Open (reception starts at 5:30 PM)

Friday, November 14

8AM - 4:30 PM Exhibit Hall Open

8:00AM - 8:50 AM Breakout Session A

9:00 AM - 9:50 PM Breakout Session B

10:00 AM - Plenary Sessions

11:10 AM - 12:00 PM Breakout Session C

12:00 PM - 1:30 PM Lunch

Speaker Lt. Governor Pat Quinn

Teacher Recognition

2:00 PM - 2:50 PM Breakout Session D

3:00 PM - 3:50 PM Breakout Session E

7:00 PM - Gala Lakeview Museum (Dinner and drinks) Cost: $25 in advance

Saturday, November 15

8:00 AM - 8:50 AM Workshop Session 1

9:00 AM - 9:50 AM Workshop Session 2

10:00 AM - 10:50 PM Workshop Session 3

11:00 AM - Annual Business Meeting

Volunteers Needed!

The ISTA conference organizers can use your assistance. Help is needed especially with registration and registration-related tasks. So if you have some free time at the conference, please stop by the registration desk.

To volunteer, you can also email Harry Hendrickson at hhendrickson@insightbb.com.

Lakeview Museum Gala

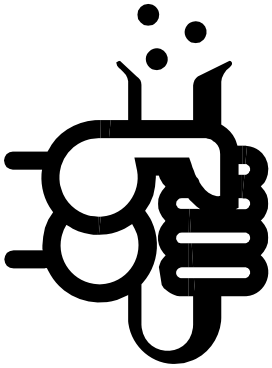
Friday Night at 7:00 PM

Please join us for:

Drinks
Dinner
Dancing
Door Prizes
Museum Tour
Laser Light Show

advance tickets ($25) required
please see the conference registration form

2008 ISTA Conference Vendors



Bedford, Freeman, and Worth/ W.H. Freeman
CommGraphics Interactive
CPO Science
Delta Education/FOSS
Environmental Education Association of Illinois
Fermi National Accelerator Laboratory
Fisher Science Education-Fisher Scientific
Flinn Scientific, Inc.
Frey Scientific
Glencoe Publishers
Illinois Association of Aggregate Producers
IL Dept. of Commerce and Economic Opportunity Office of Coal Development
Illinois Department of Natural Resources
Illinois Petroleum Resources Board
Illinois State Museum
LAB-AIDS, Inc.
Lakeview Museum of Arts and Sciences
Museum of Science and Industry
National Science Teachers Association
Science Companion
Science Kit and Boreal Laboratories
Pearson/Scott Foresman Publishing
The Scope Shoppe, Inc.
Vernier Software and Technology

Exhibit Hall Openings

Thursday 4-7PM
Reception starts at 5:30 PM

Friday 8AM - 4:30PM

Prizes available for visiting the vendor booths!

A Future in Science Starts Now
Sampling of Sessions

Catching Some Rays
Wolf-Moose Mix on an Island
Butterfly Brigade and Other PBL Units
NASA and Newton's Laws of Motion
National Board Certification in Science
Bridging the Gap Between Literacy and Science Education
Imaging the Universe through Young Astronomer Eyes
Second Chances: Mastery Learning in the Chemistry Classroom
Power Grid Applets
Nab the Aquatic Invaders Community Stewardship Project
Science, Mathematics, and Action research for Teachers (SMART) at SIUC: Design Framework & Challenges
Teaching Science and Social Science through Agriculture
Challenging and Engaging ALL Students
Illinois' Year of Science Preview with Pillars of Science History
Nanotechnology: Why it is the Next "Big" Idea
An Innovative Inquiry-Based Masters Program in Elementary Math, Science, and Technology Education
Prying into Prions: Investigating Chronic Wasting Disease
Lights, Camera, Kapok Tree!
Getting into the Swing of Things: Inertial Mass
How the Zoo can Work for You
Science Sequences and Physics First
Pre-Engineering Performance Indicators
An Electrifying 7-E Research Lesson for Educators
Forensic Science
Action Research for Science Teachers
Galileo Galilei – The Starry Messenger
DNA Sequencing for Illinois and Beyond!
Adding Illinois mAGic to your Science Curriculum
Teaching with Technology: Strategies, Successes, and Samples
The Teacher's Environmental Education Toolbox
Nanoparticles: Exciting Activities with Nanotechnology
Quilting Fun
These are a Few of Niles West's Favorite Things…
Celebrating 150 of Natural History Study in Illinois
The "Ups and Downs" of Rollercoaster Science
Incorporating Science Olympiad in Your Classroom
Improving Student Achievement in Biology: Dupage County Essential Curriculum and Assessment
The Power of the Wind
The Murder of Kirsten Knight-Jensen: Using Chemistry to Solve the Crime

Preconference

Illinois' Critical Technologies

ISTA is hosting a special pre-conference that will focus on the Critical Technologies in Illinois' future. Scientists and engineers will be sharing their latest research in the biotechnologies, nanotechnologies and geospatial technologies, the latest research developments in corn-to-ethanol projects and homeland security and the broad-based engineering advances in many fields. Our starting point will be defining the 'innovation talent' that will be essential for our students and future citizens and employees in Illinois' future. We will conclude with a pointed panel discussion asking for the input of ISTA and our invited guests about how to share the frontiers of the sciences and technologies with our students in Illinois classrooms. School administrators, Career and Technical Education leaders and counselors will be invited to join us. These leaders have realized that they need us and want to help us help our students. Please be a part of this exciting opportunity to be a part of Illinois' science education future.

Tentative Agenda

9:00 Innovation Talent Explanation and Scope of Interests to Teachers of Science
Dr. Robert Sheets, Illinois Department of Commerce and Economic Opportunity

9:30 Latest Research Advances in Biotechnology and Applications
Invited is Dr. Bill McNamara, ChemSensing, Champaign

10:15 Latest Research Advances in Nanotechnology and Applications
Invited is staff from Nano-CEMMS, University of Illinois, Champaign

11:00 Latest Corn-to-Ethanol Research Advances and Applications
Invited is Dr. Jack Ballinger from National Corn-to-Ethanol Research Center, Southern Illinois University, Edwardsville

11:45 Lunch with the Researchers

12:30 Latest Homeland Security Research Advances and Applications
To be Arragned

1:15 Latest Advances in Engineering Diversity
Dr. Mansour Tahernazhadi, Northern Illinois University

2:00 Panel and Table Discussions on Critical Technologies in our Classrooms

3:30 Adjourn to Exhibit Reception Festivities

The diversity of our audience and speakers will become our first voices on how ISTA can make a difference in Illinois' classrooms. We will develop statements that explain the absolute necessity of sharing the frontiers of science and technology in our classrooms more effectively. We realize the vital nature of this responsibility for Illinois' economy. We plan to officially communicate directly to the state leaders whose agencies and branches need our input and inform our own practice effectively.

Member Notes

Announcing a New Column!

A new column will be appearing in future issues of the *Spectrum* called "Member Notes." We'd like to keep you informed of news from ISTA members. The column will be divided into these segments:

- Marriages
- Births
- Deaths
- Announcements

Please include these items:

Marriages

- Names (only one person must be a current ISTA member)
- Date of ceremony

Births

- Names of parents (only one parent must be a current ISTA member)
- Date
- First name of baby (if desired) and gender

Deaths

- Name of deceased (individual could be a current ISTA member *or* was a member prior to retirement)
- Date

Announcements

- Name of individual (must be a current ISTA member)
- Include a brief summary of the announcement. This could be an item about a new job, a new position, an award or grant received, a retirement, or other professional announcement.

Please send all information to Julie Gianessi at schimm_julie@yahoo.com. Please write "Member Notes" in the subject line so I know the message is not spam. I look forward to your submissions.

Julie Gianessi: schimm_julie@yahoo.com

Teachers for Tanzania – Returning to Africa

This past June, Donna Engel and Alexa Schlosser (Minooka Community High School) returned to the Mwangaza Center in Arusha, Tanzania to continue their work with the science teachers of the ELCT church sponsored schools. Tanzania ranks lowest in its ability to educate their children. Most Tanzanian teachers have one textbook per eighty students, very limited knowledge in the areas of science, and teach without the basic lab supplies. Each year volunteers from the United States work with Tanzanian teachers in developing lesson plans and learning content via online partnerships. Then during a weeklong seminar, the partners present a model lesson plan to the teachers. Next the attendees learn best practices, receive training in HIV-AIDS awareness (250,000 teachers on the African continent have died of AIDS), discuss difficult topics, and develop their own lesson plans. This year's chemistry lesson was to make a standard solution of an acid and base while the biology lesson was on macromolecules and DNA.

Through the generous support of ISTA members, ISELA members, and our vendors, textbooks, microscopes, and basic lab equipment were packed in our suitcases or shipped to Tanzania to be used by our colleagues. The wonder, joy, and excitement that were on these teachers' faces as they used a microscope for the first time, read teacher editions for new ideas, or learned how to use a microscale kit was amazing! Again, on behalf of our colleagues across an ocean – Asante Sana (Many Thanks). Please continue to support Teachers for Tanzania. We are making a difference in the lives of teachers and their students in a developing nation where tribal legend is often blended with science and teachers struggle to enlighten their students.

Teaching the chicken dance!

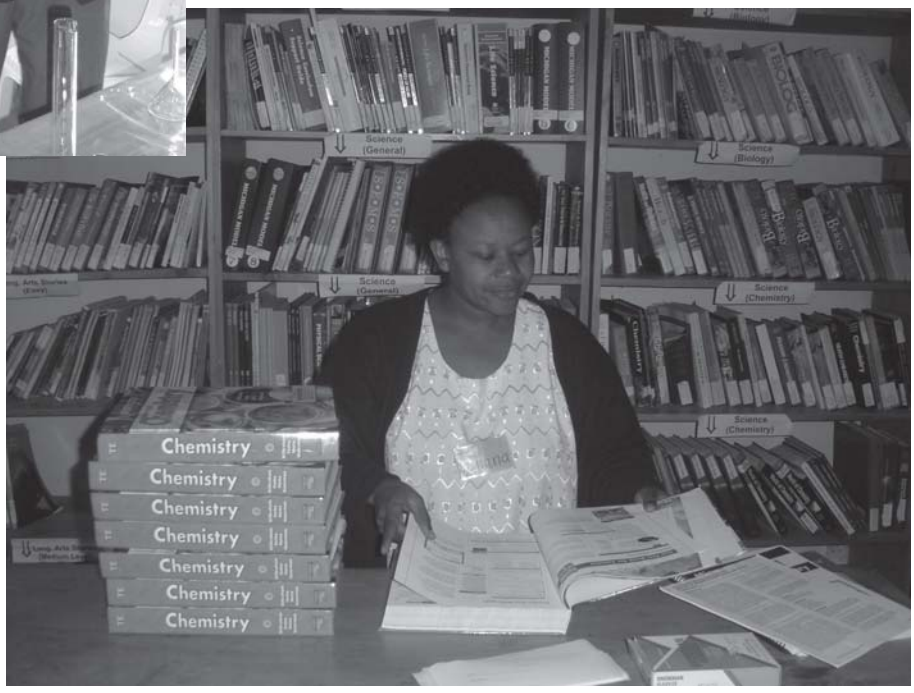
Making a double helix from flour dough.

Augustin struggling with his cartesian diver.

Making a cartesian diver.

Tanzanian teachers using a microscale chemistry set for an experiment for AIDS awareness.

Lab practical for making a standard solution.



Juliana, lead chemistry teacher, with the new teacher editions donated by Prentice Hall.

Cool Communities

The following science teachers are recipients of Cool Communities grants for the 2008-09 school year:

Ms. Patricia Parsons, biology and environmental science teacher at Gage Park High School in Chicago, working with the Friends of the Chicago River. $1,000 for water testing materials and supplies to monitor water in the Chicago River. High school students will help train grade school students and develop both English and Spanish language materials for community support of improved water quality.

Mr. Jeff Janes, science teacher at Andrew High School in Tinley Park, working with the Andrew Green Team and the District 230 Foundation. $500 to support activities including a school and community paper recycling program, a reusable water bottle project, a butterfly garden, an environmental awareness seminar, and a nature photo and poetry contest with best entries published in a 2009 calendar.

Mr. John Clark, science education consultant and retired teacher working with twelve schools and the Embarras River Management Association. $500 for materials to help train teachers and their students in monitoring and measuring the Embarras River.

Mrs. Coleen Martin, fifth grade science teacher at Wilder-Waite School, Dunlap District, Peoria, working with community organizations and her school board. $1080 to help pay for a 10KW power generating windmill for this school. Teachers, students, and parents will learn about wind generators through touring a windfarm, analyzing costs and benefits, building the generator, maintaining it, and using its energy production.

Mrs. Kristi Van Hoveln, sixth to eighth grade science teacher at Milford Grade School. $500. Working with fellow teachers, the Milford Youth Center, and local business owners, Van Hoveln and her sixth grade students will research plant varieties and costs; select, plant, and maintain plant materials in downtown planters; work with downtown Milford businesses in beautifying the business districts through plantings; and recognize their collective work through local news articles.

Ms. Patricia Parsons, biology and environmental science teacher at Gage Park High School in Chicago, working with the Chicago Conservation Corps, grade school teachers, and the Environmental River and Conservation Club. $1000 for a field trip and materials to train teachers and to develop a vermicomposting facility for school food waste. The resultant rich organic fertilizer will be provided to Gage Park citizens. Univision and Spanish language publications will be provided with information to inform parents and other Gage Park citizens.

Mrs. Jill Carter, biology teacher, Pekin High School working with the City of Pekin. $750 for a project to train and equip teachers, students, and citizens to use reusable cloth shopping bags, to reduce waste, and to publicize this conservation practice at community events.

Mrs. Molly Godar, life and earth science teacher at Rochester High School, working with the Village of Rochester. $1750 for laboratory and field equipment to train teachers and students in monitoring and surveying a village park pond. This is an expansion of a successful 07-08 project.

Mr. David Abendroth, biology teacher at Red Hill High School, working with the City of Bridgeport. $1420 to expand an existing tree planting project in a city park to include planting more trees and securing technical equipment to monitor chemical and physical parameters of soil and water.

All nine recipients (plus the 07-08 Algonquin tire inflation project organized by Mr. Gary Swick) were also granted up to $500 of funding to showcase their projects at appropriate venues, such as community, professional, or municipal meetings.

Currently the mayors of twenty-seven Illinois cities with about 4.1 million citizens are committed to the Mayors Climate Protection Agreement, and this program was designed to help them meet their commitments especially related to education.

Building a Presence For Science
Mary Lou Lipscomb
BaP Illinois State Coordinator

- Are you a member of the Building a Presence for Science (BaP) network?
- Do you receive your monthly "Network News" electronically and other email about professional development opportunities from me (Mary Lou Lipscomb)?

If your answer to the first question is "yes" and the second is "no," there may be two reasons you are not hearing from BaP on a regular basis.

#1: It might be that you have changed your email address and not updated your information. Login at the BaP web site (www.bap.nsta.org) and when you get to your page, click to change your contact information. After you have changed your information, be sure to click the "submit" button at the bottom of the page. If you don't know your password, contact me at lipscomb@imsa.edu and I will have your login and password sent to you. Include your full name and school, and indicate that you need your password in the body of the email message.

#2: Your school's or district's SPAM filter is not allowing the email to get through to you. You might try adding my email address lipscomb@imsa.edu to your address book, but if that doesn't work you will need to contact the person in your district who sets up the filters.

If your answer to both questions is "no" then check-out the updated Building a Presence for Science web page on the Illinois Science Teachers Association (ISTA) web site (www.ista-il.org) to find out more. Click on the NSTA/BaP logo and it will take you to the Building a Presence for Science web site where you can volunteer to be a point of contact in the BaP-Illinois network.

In addition to the direct link to the national BaP web site, the BaP-Illinois web page now includes a list of all of the current BaP state partners and links to their websites. Any organization or institution interested in being a part of the Building a Presence for Science network in Illinois is invited to check out the Opportunities and Responsibilities of BaP state partnership by going to www.ista-il.org and clicking on the link to Building a Presence for Science in Illinois and then State Partners.

Building a Presence for Science (BaP) is an electronic network initiated by the National Science Teachers Association and implemented in Illinois by ISTA to foster communication, collaboration, and leadership among science educators. Through the network, teachers and other science educators are provided with information about professional development opportunities and science teaching resources. Network participants also have the ability to share ideas and information with each other by using the BaP web site www.nsta.org/bap to send email or by posting ideas or questions on the Illinois message board.

The BaP network is growing in Illinois and if you are not member, you are encouraged to participate. Our ultimate goal is to have a point of contact in every school in Illinois. Points of contact are seen as communicators, leaders, and advocates for standards-based science education. As each school joins the network with a point of contact, Building a Presence becomes a more powerful means of communication among science educators. For more information about BaP-Illinois go to www.ista-il.org and click on the link for Building a Presence for Science.

Articles

It's Only Physics!

Tom Foster

Southern Illinois University, Edwardsville

You'll be teaching physics this year!

"You'll be teaching physics this year."

Does this phrase from your principal make you cringe? "But I am a biologist," you mutter back, knowing the inevitable response: "You *are* certified in science right?"

Thus, a new era in Illinois certification and NCLB pins you against the wall. Before you ask "How many years until retirement?" here is a secret your college professors never told you: Physics is fun to teach. You may have dreaded taking physics, the blackboard filled with equations, the tedious lab reports, and the exam averages in the thirtieth percentile. Nevertheless, just because *you* may have had a poor experience in physics does not mean that you will cause that same experience for your students. Here are a few simple things to keep in mind.

College Preparation for Physics Should not be Your Goal

A survey[1] given to nearly 2000 introductory college students determined that an introductory high school calculus course has as much impact on student success in their first college physics course as does their first high school physics course. In fact, when comparing average college physics grades between those students who had high school physics and those who did not, there is no significant difference. Furthermore, only 45% of students who take physics in high school go on to take physics in college: the minority of your students. The most meaningful impact on a student's success in a college physics course, according to this survey, is made by taking a second year of physics. So take the advice of this survey and remove college preparation as your primary goal.

Let the Standards be Your Guide.

The Illinois Learning Standards for Science[2] give three distinct goals: Goal 11 is about inquiry and design; Goal 12 contains the standards for content knowledge; and Goal 13 is concerned with science as a human endeavor. If you are not familiar with these, spend a moment to review them.

Pay particular attention to Goal 11, because physics is a natural fit for the inquiry and design standards. Nearly all of the mechanics covered in an introductory physics course can lead to inquiry-based laboratory experiments. For example, battery-powered cars demonstrate the relationship between position and time, reinforcing the concepts related to vectors. Rolling toy cars down ramps allows you to extend the concept of velocity into acceleration. Once your students master acceleration, force and Newton's Laws of Motion quickly follow. In fact, it is amazing how much physics can be taught using toys[3]. Even the most sophisticated high school students find toys a highly motivating way to learn.

The second half of Goal 11 concerns those standards that teach design. This is usually a challenging goal for the other sciences, but not for

Only 45% of students who take physics in high school go on to take physics in college.

physics. Pitsco and other companies sell design kits which are easy to use to introduce basic physics principles like force, torque, and energy. Design projects also provide the necessary reinforcement of those "build – test – rebuild" processes that drive the engine of modern technology.

The content standards for physics may look daunting, but many of them have familiar applications from your chemistry and biology courses. Just take time to review before you teach. A phrase like *nuclear force* seems intimidating until you remember that it relates to the radioactive decay you learned during your inorganic chemistry days. As for circuits, you can teach the underlying concepts using batteries and light bulbs from Radio Shack. Every physics teacher is known at his or her local Radio Shack. It's a good idea for you to get into that community of support, too. There is always at least one employee who can answer your questions and help you create some basic labs that introduce everything from switches to capacitors.

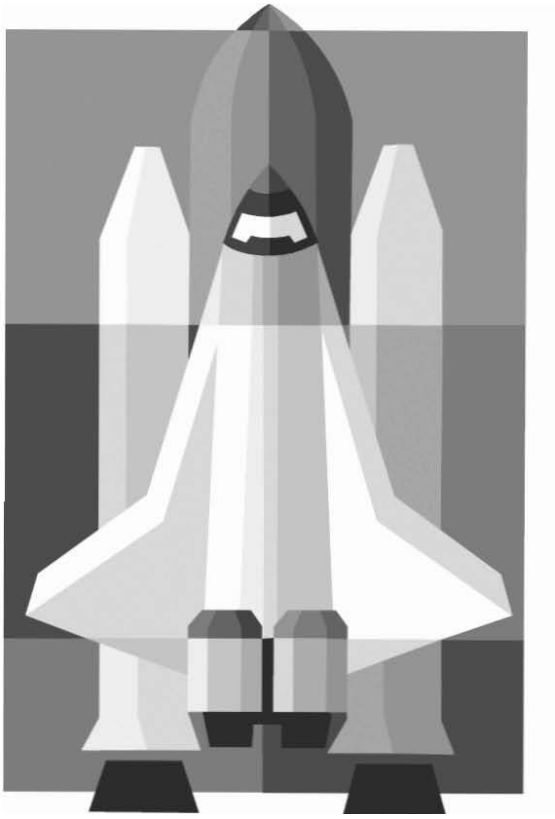
If you're a biology teacher you already have a wealth of examples of how science is a human endeavor and how science impacts humanity, so Goal 13 is easy. Go with your strengths and do not feel guilty about using biology examples. In fact, the more connections you make between physics and biology, the better. Today's students need to know that all the sciences are interconnected.

Problem Solving is an Important Goal

Employers value employees who can work in teams and who can solve problems[4]. In other words, employers need people who can do things a computer cannot do. The days of encyclopedic knowledge being valued, ended with the Internet. Now an employer need only turn on a computer to access practically all of human knowledge. In today's business world, the necessary skill is *using* knowledge. This is why inquiry and design are so important in the standards and why employers like problem-solvers.

Physics is a science that is composed of a few fundamental principles that get used in all sorts of new situations. If you can teach your students to start every problem from one of these principles, you will have gone a long way to making them good users and processors of knowledge.

Notice I did not mention mathematics. Solving complex algebraic equations is not physics problem-solving. Physics problem-solving is using key concepts in new situations. There are many great conceptual problems[5] for physics teaching that require careful and systematic application of concepts but very little mathematics. Furthermore, students will learn more doing the problems themselves, as opposed to watching you solve problems on the board. Please do not let the math side of physics scare you away from teaching physics.



You Can Find Help Everywhere.

Illinois is rich in physicists. In every corner of the state you will find them in universities, national labs, and colleges. All of us love to talk physics and can be called upon to wax poetically about energy or what comprises mass. However, if you need a more focused physicist, I would start by checking with either your ISTA regional director or by visiting one of the following websites.

- Illinois Section of the American Association of Physics Teachers (www.isaapt.org)
- Chicago Section of the American Association of Physics Teachers (http://www.neiu.edu/~csaapt/)
- St Louis Area Physics Teachers (www.slapt.org)

All of us are teachers who love physics and love to share teaching tips. And we are very friendly and approachable!

Endnotes

1) Sadler, P.M. and Tai, R. H. (2001). Success in Introductory College Physics: The Role of High School Preparation. *Science Education* **85**: 111 – 136.

2) http://www.isbe.net/profprep/standards.htm

3) Taylor, B.A.P., Poth, J., and Portman, D.J. (1995). *Teaching Physics with Toys*. Terrific Science Press; Middletown OH. ISBN: 0-07-064721-6

4) http://www.aip.org/statistics/trends/highlite/bachplus5/figure2.htm

5) Okuma, T., Maloney, D., & Heiggelke, C. J. (2003). *Ranking Task Exercises in Physics: Student Edition*. Englewood Cliffs: Prentice Hall.

Author Information

Tom Foster teaches physics and is the director of the Office of Science and Math Education at Southern Illinois University, Edwardsville.

Picture That:
Build Scientific Awareness through Sketches and Drawings

Jean Mendoza
Millikin University

Fourteen kindergartners are seated around the largest tree on the playground, drawing the tree and its shadow. Later, the teacher examines the drawings and sees that most of his class has depicted the shadow as starting at the base of the tree. The drawings by Eunju and Cale, however, show the shadow standing in the air next to the tree, not touching it. The next day, he takes a small group of children, including Eunju and Cale, to the tree to observe and talk about the shadow. Afterward, Cale says, "I think my drawing is wrong." He takes paper and pencil and sketches the tree and shadow again, making the shadow start at the base.

Do you tend to think of drawing as something that happens only in art class? It's true that the skills and techniques involved in sketching and drawing are basic to the visual arts, but the same skills and techniques have been essential to the sciences since before photography was invented. Field sketches and detailed drawings made it possible for many a scientist — from Leonardo da Vinci to Darwin — to create a visual, non-verbal record of their ideas and observations to share with colleagues and the public.

Digital cameras and computer software are readily available and highly touted for recording and sharing data. That makes it easy when we're teaching to bypass the benefits of "old" but effective tools and methods — such as using pencil and paper to create representations of the visible world.

A glance at the Illinois Academic Standards turns up several benchmarks that can be addressed by the use of drawing in science.

- 11.A.1d Record and store data using available technologies.
- 1.A.2b Collect data for investigations using scientific process skills including observing, estimating and measuring.
- 11.A.2e Report and display the results of individual and group investigations
- 11.A.1f Compare observations of individual and group results.
- 12.A.1a Identify and describe the component parts of living things (e.g., birds have feathers; people have bones, blood, hair, skin) and their major functions
- 12.B.2b Identify physical features of plants and animals that help them live in different environments (e.g., specialized teeth for eating certain foods, thorns for protection, insulation for cold temperature).
- 12.E.1a Identify components and describe diverse features of the Earth's land, water and atmospheric systems.

Sketches and drawings often become talking points in the classroom, sparking conversations, disagreements, and problem-solving. Such discussions are activities that address language and literacy benchmarks, as the following vignette illustrates.

Paolo, age 7, stands in front of his classmates, talking about his drawing of a fire truck. (The class was engaged in a measurement project, and had visited a fire station to find out what firefighters measure.) He points out lug nuts on the tires, the position of the doors, the lettering on the truck's side. Caitlyn raises her hand and asks, "Why did you put the [emergency] light up in front [on the cab]? The light is at the back." "No," Latasha asserts. "I saw that truck. The light is on top and the firefighters sit under it. Paolo's drawing is right." "Can we go back the fire station and see where the light is?" Caitlyn requests. The teacher

suggests emailing the firefighters instead. She scans Paolo's drawing into the computer and sends it to the firefighters along with a note composed by Caitlyn and Latasha. The next day, a firefighter responds: Yes, Paolo's light is in the right place.

"When I saw what the kids put into their drawings, and heard them talk to each other about it, I could see so many possibilities!" Dana, a former teacher says. "Once I got past the barrier of feeling like I was so bad at art that I couldn't help them learn to sketch and draw, it worked out extremely well. It wasn't just about meeting the standards, though that definitely happened."

Dana comments that most, if not all, of us could draw before we could write. That makes drawing a natural, developmentally appropriate way to engage with such investigative tasks as collecting, recording, and sharing data. Noting that teachers may need to model drawing to record and to communicate, she says, "Get over the idea that Drawing = Art and that you're no good at it. If you're a teacher, a little thing like lack of experience shouldn't stop you from introducing students to observational drawing. It's time to model having the courage to be imperfect! Find a soft-lead pencil, stick a sheet of paper on a clipboard, set a rock or a gourd or a beaker in front of you on the table, and start drawing it. You'll be fine."

Teachers who have students record data by drawing like to introduce sketching early in the school year. Sketches don't carry an expectation of realistic perfection. A sketch lets a person quickly keep track of important features of something he/she sees. The goal is to get as much information about a specimen, object, or scene onto the paper in a very short time. It's a bit like writing a rough draft. An observational drawing is more detailed and can take quite a bit more time. The person drawing is making an effort to "tell more of the story," to be more accurate, so the teacher might wait until the students are comfortable with sketching to introduce drawing from observation.

To help a class get started with sketching, a teacher might invite students to collect specimens or artifacts related to what they are studying: leaves, rocks, hardware, insects — whatever! The teacher

Sketches and drawings often become talking points in the classroom, sparking conversations, disagreements, and problem-solving.

then might select one of the items to be the subject of his demonstration, setting it on a table or on the ground and then "talking his way" through the process. "I'm quickly sketching what I observe. I can see only part of this tree branch, so that's what I'll sketch. There are a couple of bumps on it. Those have to be in the sketch…."

When the sketch is complete, students will benefit from having some conversation about it. The teacher might hold up the sketch, and invite students to look closely at it. "Take a look at my sketch. Then look at the branch. What do you think? Did I leave anything out? Did I draw anything that shouldn't be there?" Students often appreciate the fact that a sketch can be changed by adding or taking things out in response to their suggestions. They seem to like knowing that their own first tries at sketching aren't carved in stone, so to speak. The teacher can then explain, "This is one way of keeping track of our data when we're doing research. We can use it to report back to other people who didn't see what we saw."

Very young children tend to not be self-conscious about their drawing efforts. Older elementary-age students are more likely to exclaim, "But I'm not an artist! I can't do this!" The older students may also worry that peers will make negative comments about their sketches. Some teachers note that it can help to point out that their

Drawing is a natural, developmentally appropriate way to engage studdents with investigative tasks.

own sketches are not perfect, emphasizing that what matters most is that a sketch shows key details.

One strategy some teachers use to get students started on sketching is to make it a small group activity. They have groups of five to eight students select different objects to sketch, and set the objects on a table. The students then position themselves around the object so they will be sketching it from different viewpoints. (Each student should have a pencil or fine-point marker, paper, and a clipboard. Erasers aren't necessary; if a child doesn't like what she's drawn, she can start again in a corner of the paper or turn the paper over.) After a minute or two of sketching, the teacher asks the children to stop and invites them to look at one another's sketches. At first, the teacher may need to start the discussion to help students focus on the varying perspectives. "Rashad was on one side of the table and Jack was across from him. What did Jack put in his sketch that Rashad didn't? What did they have that is the same?"

For some children, the idea that they should draw only what they see seems to be challenging. They feel they ought to be drawing the entire object at once. Or they may feel compelled to add embellishments from their imaginations (star-shapes, rainbows, cartoon characters, and so forth). These are opportunities for teachers to talk about point of view and the importance of not making things up when recording and reporting scientific data.

As sketching becomes part of the routine, students are likely to use it on field trips (site visits), when they have limited time to collect information. They can make their field sketches of plants, animals, buildings, landforms, people and objects in addition to taking notes. Younger students who don't yet write well can record what they see through sketches alone, or dictate what they want to say to an adult. Teachers usually give students opportunities to share and compare sketches with peers when the group returns to the classroom. Teachers might want to model thought-provoking questions and comments that help children move away from judging artistic merit and focus instead on completeness of the image. "Leah, the way you drew the toadstool shows how round the top was. What can you tell us about the spots you drew on it? Did you notice anything else about the toadstool that you didn't put in your sketch?"

One teacher reports that it can be a challenge to avoid saying things like, "Good job" or "Nice drawing" when several children at once are trying to show her their sketches, but such evaluations create the wrong focus. "The goal is not to do something nice or good. The goal is to communicate through drawing. It won't take children long to see that the more detailed and complete a sketch is, the more information the viewer can get from it."

Drawing and sketching live animals, teachers note, can be both rewarding and a major challenge for children. Creatures that have long inactive periods are easiest to draw, of course: reptiles, amphibians, some crawling insects, and geriatric cats or dogs, for example. One teacher recalls the determined but utterly frustrated look on the face of six-year-old Samuel who wanted to draw five-day-old chicks in a large box. "They won't STOP!" he shouted. He kept trying for at least ten minutes before he set down the clipboard and joined his class for lunch, out of patience at last.

After a class has some experience with sketching, the teacher can demonstrate the difference between the rapid sketch and the slower, more intricate and accurate observational drawing. Many students, when encouraged to take their time and focus on details, can produce some astonishing results. For example Stevie, age seven, was known for not being still. Yet, he sat for nearly half an hour drawing one outside wall of a building, painstakingly putting in every brick. He did not

complete the drawing then, but returned to it the next day with similar concentration. Grace, drawing the double doors at the back of her first-grade classroom, included something that was news to the adults who had worked in that room for years: the pattern of the wire grid between the glass panels of one door was diagonal while the other door had a vertical/horizontal grid.

The two drawings just mentioned eventually became part of a book assembled by the students and teachers. Making the book was a culminating activity for the project known as "The Building Where Our School Is." It was distributed to families and sold as a fund-raiser — another potential use for observational drawings!

Having a student draw the same item two or three times provides a window on changes in his or her understandings of whatever he/she is drawing — a form of authentic assessment. In one example provided by Dr. Lilian Katz at the University of Illinois, a child's first sketch of a tree features two parallel lines (the trunk) topped by scribbles depicting the leaves. The second drawing of the same tree by the same child shows awareness that the trunk forks into two main branches; some of the leaves are shown individually. The child's final drawing shows much more attention to leaf structure and position relative to the trunk. Dr. Katz notes that the teacher had not corrected the child; these changing perceptions came about through repeated observations of the tree. The drawings can also help teachers catch misunderstandings and unanswered questions about things they are studying— as in the opening anecdote about the placement of a shadow.

Get over the idea that Drawing = Art and that you're no good at it.

Asking students to label their drawings to show the parts of the object drawn takes the graphic representation to another level. The labeled drawing becomes a teaching tool which the student uses to share knowledge. Well-made, clearly labeled drawings can be mounted on the wall or photocopied and handed out for classmates to study.

Another activity, popular with some teachers and students, entails asking students to augment their initial drawings by adding color and other details. The teacher makes photocopies of a student's drawing, keeping the original in the student's file and making one of the others available to the child. Students then are invited to add to their drawings using crayons, markers, colored pencils, paint, collage, clay — any available medium that strikes their fancy. They can do so to make it more realistic, or they can use the opportunity to bring in fantasy elements. Children's initial drawings and the augmented versions can be displayed together effectively on a bulletin board.

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Sketching and Drawing Websites

The following Internet resources might be useful to teachers who want to involve children in sketching and drawing in the classroom.

Drawing in the Context of a Project by Sylvia Chard http://ceep.crc.uiuc.edu/eecearchive/books/projcat2/chard2.html
The Combine Project: An Experience in a Dual-Language Classroom by Rebecca Wilson http://ecrp.uiuc.edu/v3n1/wilson.html
Individual Student Growth [from the Measurement Project] http://www.ed.uiuc.edu/ups/curriculum2002/measure/eval2.shtml#projectportfolio

Will Technology Transform Science Education and Our Schools?

Richard A. NeSmith

North Greenville University

This generation of students, referred to as *Millennials*, are known as the first generation to not know life without a cell phone.

Will technology transform science education and our schools? Or, has technology already transformed our classes and our schools? Alas, in education, we seldom seek to properly isolate variables so as to be able to go beyond simple associations, correlations, or identify effects and causation. Even our current practices in public education of seeking correlations between variables and observed results are incomplete and inadequate, thus resulting in our weather-like change in educational practices. Technologically driven changes, however, will change what we do and how we do it. The aim of this article is simply to point out some of the innovative changes that are presently challenging and altering the way we will teach and the way our students will obtain their educations. These changes will begin to have their effects on teachers and students.

Current students are very suave and this generation of students, referred to as *Millennials*, are known as the first generation to not know life without a cell phone (The Center for Digital Education, 2008); and by cell phone we are speaking of a pocket size phone, camera, camcorder, computer, browser, Internet surfer, data receiver, and so forth. Transformation is presently taking place rather rapidly, especially outside of education. Such transformations are actually challenging our educational system to the degree that we are realizing that placing computers and Internet access in every school is not enough to produce success. Christensen, Horn, and Johnson (2008) pose that "computers have had little effect on how teachers teach and students learn" (p.72). The present practice by the majority of educators is simply the same practices that have merely been shifted to computers, thus creating little change (NeSmith, 2006). Christensen, et al (2008) posed that though computers have been around for three decades, our classrooms are still largely the same as they were prior to the computer revolution (p. 72).

We witness logistical changes almost daily that are challenging and, in most cases, altering our traditional practices. Business and industry have quickly implemented many technological changes. As the changes occur the new generation adapts quickly to these. The average person has made many changes in their personal lives as a result of the transformations brought about from technology. In this author's own life he finds that he seldom physically visits his bank, for all of his banking is done online. My paycheck is deposited straight to the bank. There is little handling of physical money, as debit cards have relieved us from carrying cash. At the gas station I simply insert a debit card and immediately the money is deducted from my account (and I do mean immediately). Even shopping habits are changing, as I often shop for books, clothing, baseball tickets, and baby items from my computer. After a recent purchase, I wanted to know the date of delivery of an item. I was able to track the package online, right down to the *time* of delivery. Writing out bank checks for bills is nearly history as they can be paid automatically using today's technology

(at least as long as I keep money in my account). While driving to work the other day my automobile warning light lit up and I learned that my car has computer chips that record the problem which my mechanic can later access. The other night I spent a few hours chatting with my son. He lives in Australia. It cost me nothing for we were both connected to the Internet. After a long chat, I wanted a snack and so I simply pressed the reheat button on the microwave and it monitored the internal temperature of the food I anticipated eating, until it is properly warmed, before shutting itself off. I, of course, could go on and on, but I think you get the essence of it. Technology has already changed much of what we do and how we do it. These changes, however, are almost always examples of technology eventually "interrupting" the traditional or the status quo. These types of changes have, and will continue, to take place. But not until they have challenged the system, and then created new practices.

What about the changes in the educational sector? Granted, change in education is much slower to occur and to be accepted as paradigms shift. Changes that enter into the creation of a paradigm shift are generally considered *disruptive innovations*, which according to Christensen, Horn, and Johnson (2008), result in *disruptive changes*. These changes are imposed on the traditional system by an outside force; in our case this force is technological advancement. This is the present condition of American education. Public education, especially, is in the midst of a philosophical transition resulting from the advances in technology, and the system is being challenged. As educators, we are moving from the traditional concept that learning is memory, change in behavior, or higher tests scores, and is a phenomenon that occurs only in school, to the modern technologically-based concept that learning is multifaceted and does not take place only in the classroom, and that learning is frequently collaborative.

This change in the concept of learning has been ongoing for some time now, yet, this paradigm shift is really quite phenomenal. For some this seems common sense (for we all have learned a great deal, and most of it did not take place in a course or in a classroom). For others, they are grappling with

Changes that enter into the creation of a paradigm shift are generally considered *disruptive innovations.*

cognitive dissonance. The sixties had its classrooms without walls. This generation now has *classrooms without buildings*. It is technology that is placing the pressure on educators and challenging us to re-examine our philosophy of education and our teaching strategies.

Major changes brought about by technological advances are making transformations in education. Included in these alterations is the concept of virtual schools. Last year this author collaborated and consulted with a North Carolina school district on the creation of an early high school virtual college. In addition, I also became involved as a member of a board of directors for a newly forming virtual academy in our state. The experiences have been invigorating, enriching, and eye-opening, as witnessing the educational concepts evolving as a direct result of technological advancement were encouraging, if not spell binding. Many of these innovations will eventually have an effect on our traditional classrooms, if they have not already done so.

Students have been gaining greater control over what and where they study. Now, and most importantly, they are gaining greater control over how they will receive instruction. Many are opting to hybrid their educational training. For example, those students in the virtual early college are attending a newly designed on-campus high school, as we are traditionally accustomed to; however, many of their courses are being administered online from an accredited university by college professors

Students have been gaining greater control over what and where they study.

in the state. The argument that is often used that *elearning* is too high tech and lacks high touch (Naisbitt, Naisbitt, & Philips, 1999) and that students need socialization, are being addressed and many are being put to rest. Logistically, these students have a few traditional teachers present on campus, but they also have virtual online instructors for other specified courses. In this particular school, students not only have a few traditionally delivered courses on campus, but they also have mentors/tutors who meet with them at the high school campus for tutorials, which assist them in their elearning courses. In essence, the result is that they receive far more educational support in the virtual early college format than do most students in the traditional system. And, in addition, nearly one-half of the credits they earn for high school graduation are dually earned at the university level. Data suggests that all students are benefiting from this format, regardless of whether they were considered good students prior to enrollment. Students can, therefore, potentially graduate from high school in four years (9-12, though some students may be encouraged to consider a five-year track; grade 13) with a high school diploma and two years of university transfer credits.

The other innovation mentioned is that of the virtual school. In the formation of the newly formed state virtual academy where I served as a board member, the interests and demand has been overwhelming. Set up in the chartered fashion the non-profit organization opened its [virtual] registration with a percentage based on application selection and a percentage chosen from a random drawing from an open applicant pool. In a matter of one month during the late spring 2008 over one thousand students enrolled in this virtual academy (k-12). By the end of month two (early summer) there were an additional six hundred to seven hundred seeking entrance. Presently, the enrollment is approaching 2000. Some students have enrolled in particular courses while others have enrolled as full time students. In practice, this could mean that in some schools a student may not be enrolled and taking all their course work from that particular school, as they will be completing course work by exercising the options of getting training elsewhere. At present, the data results from similar virtual academies in other states are based on very small data samples, but tend to indicate that the virtual school (or course) does at least as well as the traditional mode of education. Past concerns of the retention rates for such nontraditional modes of delivery are being overcome through course design (Dietz-Uhler, Fisher, Han, 2007).

The full effect such innovations will have on the traditional American system of education and school is still unknown. That it will affect public education is a truism. That it has already had an effect on higher education is well-demonstrated (Wallendorf, 2008). In a recent meeting with a "traditionalist" university administrator, it was shared with the deans that "online learning is here whether we like it or not." This VP, however, had misjudged the extent to which technology is already changing the educational scene when he made it known that he saw "no need for an online undergraduate degree, but that maybe one would be needed in seven or eight years." What he failed to realize is that accredited undergraduate degrees have been offered online for nearly ten years now, and for the last few years, undergraduate pre-service education/teaching degree programs have become available, resulting in teacher certification. Such

Online learning is here whether we like it or not.

statements are truly short-sighted in comparison to the present reality.

With all the discussion on technology and virtual learning illustrating changes being made in education, we must examine the experiences and thoughts of those on the front lines, the teachers. Teachers often times know better than the "experts" in academia what works and what does not work. Is virtual always best? Or, is it just another option that one might pursue? Or, maybe it should simply be another item on the menu which we use to complement the meal? In science classrooms, for example, we have some virtual options such as virtual simulations and virtual tours.

There seems to be a division among science teachers as to the importance and acceptability of virtual simulations in the classroom. One example of this division is the discussion on virtual dissection as an acceptable substitute for traditional real animal specimen dissections. We all have had the experience of the sights and smells of a dissection activity in school. Many feel that this experience is tried and true and must be continued, while others see the practice of actual dissection as cruel and unethical. This division is clearly seen in the columns of the *NEA Today* and *Current Events* magazines. As one reads the voices in these columns it becomes evident that there are valid reasons on both sides of this issue. It is important to realize that the issues discussed in these articles are not really discussing the academic impact of the practice on students but often times is reflecting the emotional and ethical side of the decision.

Much can be learned by asking questions. In order to consider this paradigm shift towards virtual education and teaching practices, we need to ask questions. So, what are the reasons for using virtual dissection in a science classroom? First, the overwhelming reason is finances. The savings are huge for school districts that may be without resources and very small student expenditure accounts. It is estimated that schools could save approximately $1,500 over three years by switching to virtual dissection on the basic level. Another reason for supporting virtual dissection is ethical in nature. Many educators feel that it is inhumane to kill animals for the cause of science. The proponents of virtual dissection point out that it is not ethical to force a student to choose between their moral convictions and a grade when going to science class, and yet, many students become very interested and engaged in biology when they get beyond the "oh my!" stage of dissection.

The reasons against virtual dissection are just as numerous. In this camp, the main reason has to do with reality. Observation is key to the scientific method and, according to those who support reality dissection, observation is greatly enhanced during the real-life experience. Color, texture, smell, and the ability to touch are all useful tools and modalities to build understanding of living organisms. Many also believe that discussion on death of the animal opens doors to understanding the process of making ethical decisions.

The main question remains … Does virtual dissection have an academic advantage over traditional dissection? According to Montgomery (2008) the answer is no. In her study she compared two groups of students. Both groups were given a pretest on amphibians before the start of the unit. One group then practiced virtual dissections and the other performed traditional dissections on frogs. At the end of the unit students were given posttests and lab practicum tests. There were no significant differences on the lab practicum tests. Montgomery also examined subgroups in the study and concluded that there were no significant differences in lab practicum regarding race, gender, or grade level. On the other hand, Akpan (2002) found that

There seems to be a division among science teachers as to the importance and acceptability of virtual simulations in the classroom.

Virtual education needs to be one that provides choice to the students, parents, and even the teachers.

learning imporved with middle grade science students who had prior use of a simulation before dissection, and that a simulation used before dissection led to better achievement performance than a simulation used after dissection.

Might it be that the final question of virtual education must be left as a personal one to the instructor? Or to the student? And, could it be that the paradigm shift that is now taking place emphasizing virtual education needs to be one that provides choice to the students, parents, and even the teachers. It may be some time before the jury deliberates on virtual schools and virtual modes of learning. Rather than denying the benefits or potential shortcomings of the changes being brought about by technology, we need to recognize that in our educational system, we have many types of learners and that we must provide opportunities for many types of strategies, methods, and options … for we all learn a bit differently.

Will technology transform science education and our schools? It has already begun to do so. As the outside advances place pressure on the system of education, changes will occur.

References

Akpan, J. P. (2002). Which comes first: Computer simulation of dissection or a traditional laboratory practical method of dissection. *Electronic Journal of Science Education, 6*(4), Retrieved August 6, 2008, from http://www.springerlink.com/index /H341088M84001418.pdf

Christensen, C. M., Horn, M. B., & Johnson, C. W. (2008). *Disrupting class: How disruptive innovation will change the way the world learns*. New York: McGraw-Hill.

Current Events. (2006, November 17). Cutting Controversy. *Current Events,* 64.

Dietz-Uhler, B., Fisher, A. & Han, A. (2007). Designing online courses to promote student retention. *Journal of Educational Technology Systems, 36*(1).

Montgomery, L. (2008) A comparison of the effectiveness of virtual and traditional dissection on learning frog anatomy in high school. Ed.D. dissertation, Wilmington University, United States-Delaware. Retrieved July 21, 2008, from Dissertations & Theses: Full Text database. (publication NO AAT 3287762).

Naisbitt, J., Naisbitt, N. & Philips, D. (1999). *High tech high touch: Technology and our accelerated search for meaning.* London: Nicholas Brealey Publishing.

NEA. (2007, January). Debate. *NEA Today, 25*(4), 45.

NeSmith, R. A. (2006). Middle school recommendations: Improving middle school student success is vital. *Eastern Education Journal, 35*(1), 9-16.

Wallendorf, L. (2008). *A connected life: A look at mobile strategies for schools, colleges, and universities.* Digital Center for Education. Retrieved August 1, 2008 from: http://www.centerdigitaled.com/fileReg.php?pub_id=124 centerdigital.com

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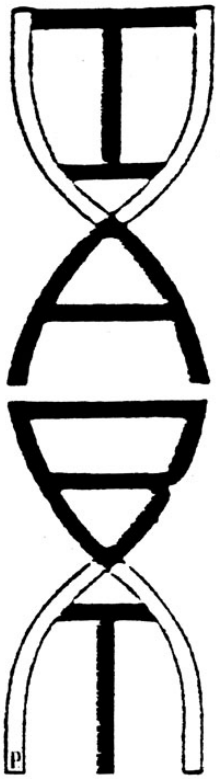

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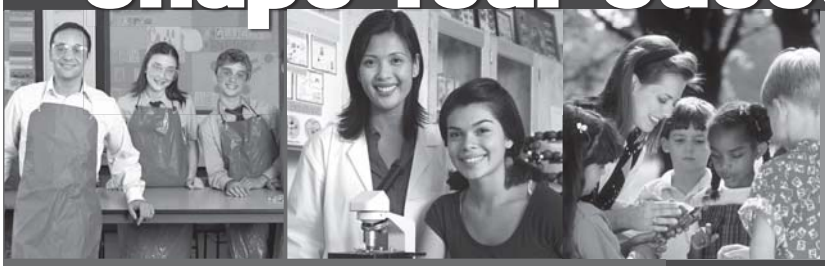

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