

NO CHILD LEFT BEHIND (NCLB)

What does it mean for us as teachers?

In an effort to improve student achievement, a number of initiatives have been introduced into school curriculum planning. The mandates of NCLB include changes beyond the test schedules for mathematics and reading – a focus that seems to have garnered the highest priority.

One of these is **“Data-Driven Decision Making”**. This involves the collection and analysis of test results, demographic information, and other student data to enable educators to make more informed decisions about curricular instruction.

So What’s New?

Schools have routinely utilized standardized tests and sometimes other formative and summative assessments as a basis for student progression. But the accountability demands of NCLB point to the need for changes in student assessment, including more detail concerning the individual needs of students.

How to develop and use more comprehensive data that is accurate and can be accessed in a timely fashion was the topic of a panel held April 8, 2004 in Washington, DC. Two key issues emerged:

How to decide what kind of information to collect

How to use this information to advance student achievement

Some of these data may already exist but reside in unconnected databases. Valuable data may include information concerning students’ hearing, vision, speech screenings, attendance, and even nutritional information.....addressing the variety of student needs that influence their learning needs.

To integrate this data requires a robust and sophisticated technology system. One solution is development of a “Data Warehouse”. This is a system that extracts data from various databases, reformats the data to work together, and provides a user-friendly way to use this data. This means a commitment to provide the necessary resources. This reaches beyond the cost of the warehouse and includes significant time for pre-planning, training and professional development.....critical for educators to know how to use these data for analysis and use in the classroom. Panelists agreed that regardless of NCLB requirements, data-driven decision making will improve student learning and achievement as the learning needs of each student are met.

Data-Driven Decision Making Resources

The U.S. Department of Education sponsored a technology leadership summit in March to provide guidance and strategies. Presentations from the summit are available at:
<http://www.nclbtechsummits.org/summit1/summit1.asp>

The Consortium for School Networking 's "Data-Driven Decision Making: Vision to Know and Do" is a free online source for information. Part of this initiative is a self-assessment tool.
<http://3d2know.cosn.org>

Johns Hopkins University Center's for Research on the Education of Students Placed at Risk published a report in January 2004 titles "Software Enabling School Improvement Through Analysis of Student Data".
<http://www.csos.jhu.edu/crespar/techReports/report67.pdf>

The North Central Regional Educational Laboratory (NCREL) offers a site called Toolbelt to help educators collect data about their classrooms.
<http://www.ncrel.org/toolbelt>

Other Links:

No Child Left behind

<http://www.ed.gov/nclb/landing.jhtml>

Pennsylvania Department of Education

<http://www.pde.state.pa.us>

Pennsylvania's Value Added Assessment System Program

http://www.iu13.k12.pa.us.inst_init_vaas.shtml

NO CHILD LEFT BEHIND TEACHER QUALITY PROVISIONS

The National Council on Teacher Quality (NCTQ) states that teacher quality has a well-documented and dramatic impact on student achievement. "A growing body of studies provide conclusive evidence that teacher quality is the primary school-related factor affecting student achievement". In their recent report "Necessary and Insufficient: Resisting a Full Measure of Teacher Quality" it is noted that everyone agrees (parents, educators, and policy makers) that teachers need to know the subject matter they teach. Yet traditionally institutions that train teachers (and state licenses) have emphasized teachers' pedagogical training over subject matter. This seems to have produced an alarming number of teachers who are insufficiently grounded in the subjects they teach.

The No Child Left Behind (NCLB) teacher quality provisions did not exempt experienced teachers from criteria mandated for new teachers who must:

1. possess a major in their subject area (or provide sufficient amount of relevant course work through successful completion in each of the subjects taught:
 - a.) graduate degree, b.) coursework equivalent to an undergraduate major, or
 - c.) advanced credentialing, or
2. pass a subject matter test.

Experienced teachers (having three years of experience) may choose a third route. This is loosely defined and each state can set its own standards, providing federal guidelines are followed:

1. Be set for grade appropriate subject matter knowledge and teaching skills.
2. Be aligned with K-12 learning standards.
3. Provide objective, coherent information on teachers' subject matter competency.
4. Be applied uniformly.
5. Take into consideration, but not be based primarily on , the time a teacher has been teaching a subject.
6. Be made available to the public.
7. (Optional) Involve multiple objective measures of teacher competency.

These standards are called the HOUSSE – *High Objectives Uniform State Standard of Evaluation*. As of March 2004, 30 states had finalized their HOUSSE standards.

The nation has just passed the halfway mark toward the January 2006 deadline set by NCLB when most teachers will need a “highly qualified” designation. This report (one of several to be issued) reviewed standards of 20 randomly selected states, rating each on their rigor, likelihood they will identify teachers weak in subject knowledge, the degree to which they reflect they are serious about addressing the problem, clarity, and how readily accessible the standards are to the public.

The HOUSSE standards had five problem problems consistently:

1. Irrelevancy - in applying criteria
2. Why Change? – confidence in not needing help
3. Say What? – many state standards inordinately complex

Some state standards created enormous loopholes, so even the weakest teachers can qualify. Some standards defied logic.

Conclusions:

The report concluded that states have shown insufficient willingness to create clear, rigorous, and relevant standards. With few exceptions states have failed to live up to the spirit of NCLB provisions. And the Department of Education has not sold this to the public nor enlisted the support of teachers in the cause.

Recommendations:

1. Amend NCLB to Phase Out HOUSSE Standards.
2. Eliminate State HOUSSE Standards.
3. Respect the Intent of the Law.
4. Make Compliance Less Threatening to Teachers.
5. Respect Teachers and Engage Them in the Cause.
6. Measure Quality by Results

In the Report Appendices are the Principles and Indicators for Grading the States.

This report is online at: www.nctq.org

TEACHER LEADERSHIP

You can play a vital role in creating a resilient school culture

(adapted from “Sharing the Lead”, by Janice and Jerry Patterson, Educational Leadership, April 2004)

New Principal? Changing leadership in the school administration? How to meet the challenges of reduced budgets, increased demands, retirement and mobility?

A teacher leader who works with colleagues for the purpose of improving teaching and learning (in a formal or informal capacity) can help meet these adversities. “Teacher leaders exert a major influence on how the dynamics of the school culture evolve.” The authors define school culture as having three sets of dynamics:

- What we say we believe in relation to what we believe;
- What we say we do in relation to what we do; and
- What we actually do in relation to what we believe.

Teachers can exert major influence through three sources of influence:

- Credibility
- Expertise
- Relationships

Teacher leaders can influence school resilience by

- staying focused on what matters most during times of adversity,
- remaining flexible in how you get there
- taking charge
- creating a climate of caring and support – honoring individual needs
- maintaining high expectations for students and adults
- creating meaningful participation and shared responsibility
- maintaining hope in the face of adversity

Do you belong to NSLEA – National Science Education Leadership Association? Soon their valuable newsletter will be placed online.

In their June issue of the NSLEA Navigator Joseph J. Lapiana writes about “*Strategies, Solutions and Innovations for Science Education Leaders – What Kind of a Leader Are You?*”

He notes that many leaders have experienced enormous pressures from changes and new accountability mandates, leading to overwork and burnout. And often there has been little help in development of leadership skills.

He states that “embodied leadership” is a presence that others will respect and distinguished from tips and techniques anyone can read about. It requires dedication, focus and motivation.

(This information was adapted from material by Peter Reilly – appearing in a handout from his interactive workshop on leadership by Joseph J. Lapiana, NSLEA Region A Director.)

If you are interested in leadership in informal science education programs contact Jane Konrad, 412-648-7315.

NATIONAL MIDDLE SCHOOL ASSOCIATION (NMSA) ISSUES “ROADMAP TO SUCCESS” FOR MIDDLE SCHOOLS

A new position paper released by the NMSA, the nation’s only educational organization focusing on middle schools, states 14 key characteristics that must be present over time for middle schools to be successful. This report “This We Believe: Successful Schools for Young Adolescents” can be ordered from 1-800-528-NMSA or accessed online at www.nmsa.org

A companion publication “Research and Resources in Support of This We Believe” is also available. Key characteristics include:

- Educators who value working with this age group and are prepared to do so.
- Courageous collaborative leadership.
- A shared vision that guides decisions.
- An inviting, supportive, and safe environment.
- High expectations for every member of the learning community.
- Students and teachers engaged in active learning.
- An adult advocate for every student.
- School-initiated family and community partnerships.
- Curriculum that is relevant, challenging, integrative, and exploratory.
- Multiple learning and teaching approaches that respond to students’ diversity.
- Assessment and evaluation programs that promote quality learning.
- Organizational structures that support meaningful relationships and learning.
- School-wide efforts and policies that foster health, wellness, and safety.
- Multifaceted guidance and support services.

TECHNOLOGY IN THE NEWS

Susan Patrick, new head of the federal Office of Educational Technology (OET), stated in an interview with *eSchool News* that she is interested in “looking for ways technology-driven solutions can contribute to the broader goal of helping all students learn”. She is charged with coordinating technology programs and policies to further the mission of the department and the No Child Left Behind Act (NCLB), including virtual education and eLearning, student data management systems, online assessments, and the national ed-tech plan. Patrick assumed her position on March 26, 2004, succeeding former director John Bailey, after serving as Acting Director since February.

OET is currently overseeing a three-year \$15million initiative to look at 10 statewide technology projects – from virtual classroom initiatives to professional development programs – to use as examples in a blueprint for success in other states. She is assuming oversight of the development of a new Educational Technology Plan that sought input from all stakeholders – a legacy John Bailey created. Contributors were asked to focus on three main themes: professional development, ubiquitous computing, and the needs of today’s students.

<http://www.ed.gov/about/offices/list/os/technology/index.html>

“Making the Case: Research Efforts on Educational Technology”

by John Bailey - T.H.E. Journal May 2004

In this recent article Bailey notes that “Historically, very little, if any, research that meets the scientifically based standards as defined by No Child Left Behind has been conducted on the effectiveness of educational technology”.

To address this need the U.S. Department of Education is investing more than \$56 million to study the conditions and practices under which technology is used to document its impact on student performance. There are both national and state level studies being funded. www.thejournal.com

Addendum: The State Educational Technology Directors Association (SETDA) has partnered with nine of the evaluating State Education Technology Programs (ESETP) grantees to provide dissemination and networking services through their Technology Assistance Partnership (TAP) Program.

A website will highlight the methodologies, strategies, and interventions addressed by the evaluation grants. At conclusion of the three-year period, SETDA will develop a handbook and include a section from each of the TAP members to highlight best practices.

Food Safety

Blue-light scanners could improve hygiene among employees who forget to wash their hands after bathroom breaks....a leading cause of food poisoning that affects millions of Americans every year. The new light-scanning technology was borrowed from the slaughterhouse and can detect fecal contamination and pinpoint on a digital display where more scrubbing is needed. All this is on a device the size of an electric hand dryer. eMerge demonstrated a prototype and expects sales by year’s end to schools, restaurants, nursing homes, hospitals, and day-care centers.

The scanner cannot detect salmonella or viruses that do not always spread as fecal contamination. Using a specific light wavelength, the scanners cause a fluorescence in even miniscule amounts of fecal contamination.

Related links:

eMerge Interactive, Inc.

<http://www.emergeinteractive.com>

American School Food Service Association

<http://www.asfsa.org>

Science and Our Food Supply – FDA/NSTA Free Curriculum Kit

www.nsta.org/professionalinfo

RURAL REPORT

Rural states have been concerned about the impact of the No Child Left Behind federal law and their need for more flexibility to meet the NCLB guidelines. Rural areas – defined in Pennsylvania by the Center for Rural Pennsylvania as counties and school districts with fewer than 274 persons per square mile within the county or school district – account for about 25% of Pennsylvania’s population (decreasing since the 90s).

A recent report from the state House Commission on Rural Education places the rural student passage rate at more than 15% above their urban counterparts, with students performing at or near state norms.

However, the report noted that funding is short for key programs needed to keep pace with national and statewide standards. Thirty-two recommendations included

1. the need for making technology available to all rural areas,
2. an effort to stem the migration of young people out of the rural backbone of Pennsylvania,
3. addressing compensation for school officials,
4. offering early childhood education, and
5. improved health care.

The report encouraged partnering with urban areas.

The North Central Region Math Science Education Collaborative, a partner with Pittsburgh Regional Center for Science Teachers (PRCST) serves a large rural area in north central Pennsylvania. The Collaborative offers activities for teachers and students.

Recent activities include:

April 20, 2004, 121 students and 11 teachers gathered in Cook Forest State Park to learn about nonpoint source pollution and prevention. The activity was funded by a small grant from Pennsylvania Association of Conservation Districts, Inc. Contributing their expertise to the one-day workshop were representatives from: Western PA Conservancy, Allegheny National Forest, PA Department of Environmental Protection, PA Bureau of Forestry, Clarion County Cooperative Extension, PA Game Commission, Seneca Rocks Audubon Society, Cook Forest State Park and Allegheny Valley School District.



To conduct this outdoor learning experience for students and teachers 14 learning stations and areas of study are set up in designated locations within the park. All sessions address specific nonpoint source pollution and/or the importance of non point source pollution

prevention.

June 8, 2004, the Collaborative partnered with Titusville Area School District to offer a professional Development workshop to 21 teachers. Using the Food, Land & People Curriculum aligned with PA Academic Standards and disseminated by the Office of Environment & Ecology, PA Dept. of Education, teachers participated in hands-on lessons to better understand the interrelationships among agriculture, the environment and people of the world.



Participating teachers received a three year subscription to LiveText to help them integrate information technology into their teaching.

Additional financial support for this activity came from PA Department of Environmental Protection.

Rural Roots – from Rural School and Community Trust

April 2004 Issue – features the National Park Service and tells how teachers and schools can use the national parks to enrich their place-based learning. The NPS hosts school visits and develops online materials for classroom teachers. Enrich student learning with the power of place. See www.ruraledu.org/roots/rr502a.htm

(State and Local Parks are also excellent areas for educational programs – see reference to Cook Forest State Park above.)

DATABASE OF SCIENCE RESOURCES

All FREE from NSTA:

Science and Our Food Supply –Teacher Guides for MS and HS

Dr.X and the Quest for Food Safety –interactive video

Food Safety A to Z – reference guide

Order from www.nsta.org/professionalinfo

Or write to

NSTA Science and Our Food Supply

1840 Wilson Blvd.

Arlington, VA. 22201-3000

Fax 703/522-5413

Smithsonian Institute website:

Features content from the Institution’s museums and research centers and the National Zoo. Educator’s Page, Science lesson plans, information about field trips, publications, and professional development according to keyword, grade level, and subject.

National Science Center Army (NSC-A)

A website with educational resources for MS teachers – lesson guides, classroom activities, videos, teacher’s forums and a virtual tour of Fort Discovery. Teachers can also share their programs.

<http://www.NationalScienceCenter.org>

Department of the Army, National Science Center Army

One Seventh Street

Augusta, GA 30901-1341

Classroom Activity – Recycling Water

Theme – Science Soup, Topic – Water Pollutants

Gr. 5-8

National Science Center

One Seventh Street on Riverwalk

Augusta, GA 30901

1-800-325-5445

www.NationalScienceCenter.org

Digital Library for Earth System Education (DLESE)

Resources for classroom work and informal settings. Search by grade level, resource type, collections, and standards for educational resources, news and opportunities, email discussions etc.

<http://www.dlese.org/dds/index.jsp>

MarsQuest Online

Celebrates Mars landings in 2004. Links to topic-specific resources:

General, canyons, floods and water, life on Mars and colonization, rovers, time-distance-relative sizes, and volcanoes.

Site provides activities to familiarize people with Mars and highlight intriguing questions.

<http://www.dlese.org/resources/mars.html>

eSchool News FREE Resource Center

Training teachers to better understand technology options.

Web-based tutoring appeals to students who might otherwise avoid asking for help.

Practical applications of the new Internet2 network's ultra high-speed capacity.

Also links to other websites and online resources to help put technology to work for students.

<http://www.eschoolnews.com/resources>

Food and Fitness: Activities Guide for Teachers

Produced by the National Space Biomedical Research Institute – Upper Elementary and Middle School students. Basics behind energy, metabolism, and nutrition. Third in a series of free publications for science classes. (Sleep and Daily Rhythms; Muscles and Bones). Real world situations. Aligned with NSES and available in the Education and Outreach section of www.nsbri.org

For a print copy call 1-800-798-8244

Websites with information about specific elements of the periodic table

Refer to www.webelements.com and www.chemicalelements.com

Kid's Corner section of the Groundwater Foundation's website

Check out the lesson plans, hands-on experiments, and games for students and teachers on the subject of groundwater and related natural resources.

www.groundwater.org/kc/kc.html

Science in Flight

U.S. Air Force booklet; six units and four posters about the physics of flight. For MS students. Includes calculation activities, quizzes, and a final test.

www.centennialofflight.af.mil/sa/ScienceInFlight_web.pdf

Powers of Ten Online

Online version of the film of the same name. Begins with a square 1,023 meters across and proceeds through successive magnifications to a square 10^{-16} meters across “showing” a quark in a carbon atom in an oak tree at Florida State University's National High Magnetic Field Laboratory, which hosts the website.

<http://micro.magnet.fsu.edu/primer/java/scienceopticsu/powerof10/index.html>

CALENDAR OF EVENTS

2004

July 18-21 – Summer Leadership Institute, Colorado Springs, CO. NSLEA, P.O. Box 99381, Raleigh, NC 27624-9384

July 18-20 – Laptop Institute at Lausanne, Memphis, TN
<http://www.lausanneschool.com/laptopinstitute>

July 26-27 – “Challenges in Implementing Physics First: Changing the High School Science Sequence”, Cornell University, Ithaca, NY. Travel, lodging, registration and most meals covered by a grant. Contact Lora Hine 607/255-2319 or lkh@cornell.edu

August 9-15 – Infinity and Beyond Week – Carnegie Science Center. Activities, special planetarium shows and star watching during the week of the annual Perseid meteor shower. Presentations highlight the experience of Mike Fincke, our “Pittsburgher in Space”. 412/237-3336

October 17-20 - 19th Annual Educators’ Workshop, Nano/Bio Science and Technology Education for the 21st Century. AZ State University and Phoenix Area Industry. Contact <http://MST-Online.nsu.edu/> and click on NEW:Update

November 18-19 - Energy in Schools Conference, Marriott Hotel, Albany NY. Contact Chris Mason 413/774-6051, Ext. 21 or 877/447-6527

Looking Ahead: 2005

February 10-12 - NASTS – 20, Holiday Inn Harbor, Baltimore, MD – now the International STS Association.

March 31-April 3 - NSTA National Convention, Dallas, TX

The International Union of Geological Sciences (IUGS) has selected an International Year of Planet Earth titled “ Earth Sciences for Society in the Period 2005-2007”. This effort will be a joint initiative with the United Nations, UNESCO, and others. Topical research themes include:

Water for a Thirsty Planet
Disaster Mitigation
Earth and Health
Earth and Climate
Mineral and Energy Resources
Oceans and Coasts
Megacities

An outreach program will focus on education in the Earth Sciences. For information see www.iugs.org

DIRECTIONS

SCIENCE, MATH & TECHNOLOGY COMPETITION

eCYBERMISSION is a free web-based science, math and technology competition for students in grades 6-9. Student teams identify a problem in their community that is related to either Health and Safety, Arts and Entertainment, Sports and Recreation, or the Environment. Selecting a real-life problem encourages self-discovery and illustrates how science, math and technology apply to everyday life. Teams are encouraged to collaborate using discussion forums, chat rooms and instant messaging. Teams submit a Mission Folder – a write-up of their project and attached files - via the web to complete their entry. Teams must have 2-4 members from the same grade level; all schools are eligible. Each team must have an adult Team Advisor.

- 64 Regional Criteria Team Winners = \$2,000 Savings Bond per student
- 32 Regional First & Second Team Winners = \$3,000 Savings Bond per student
- 4 National Team Winners = \$5,000 Savings Bond per student
- 12 National Finalists = \$3,500 Savings Bond per student

All students receive a T-shirt and Certificate of Commendation

The competition officially begins September 1, 2004. Teams can register from that day to December 15, 2004 by visiting www.ecybermission.com
Deadline for submitting a Mission Folder is February 21, 2005.

For further information visit the site above or e-mail
missioncontrol@ecybermission.com

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FOLLOW THE CASSINI MISSION

The Cassini orbiter and the Huygens spacecraft reached Saturn July 1, 2004. The orbiter will orbit Saturn and its moons for four years. The probe, Huygens, will dive into the murky atmosphere of Titan and land on the surface, providing scientists with vital data to help understand that mysterious, vast region.

You can build your own Cassini-Huygens spacecraft. Further information can be found at <http://nasaexplores.com/extras/cassini> Two paper model plans can be found at <http://saturn1.jpl.nasa.gov/kids/activities-model-challenge.cfm>

(note: both are challenging)

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FREE ASSESSMENT TOOLS - Meet the Needs of NCLB Act

The International Society for Technology in Education and Microsoft Corp. partnered to develop the tools for Middle –School students and use authentic, real-world scenarios to test technology skills. There are online 12 assessments, classroom curriculum and teacher support materials. Visit <http://www.iste.org>

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DRIVE A MARS ROVER

NASA has a website with an interactive program that enables the chance to drive NASA's Mars Rovers, Spirit and Opportunity, across the red planet. Frequently updated site with the latest pictures and data from Mars. Also animations and Martian trivia. See www.nasa.gov/externalflash/m2k4/driveover/frameset.html

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SEND ROCKS

Students can send rock samples from their region of the world to NASA scientists for help in understanding the red planet. NASA will use a special tool like the one on the Mars Rover to tell what your rock is composed of – and then students/teachers can make comparisons of their rocks to the ones on Mars. NASA will post a picture of your rock on the web and give you a report of what kind of rock it is, send an official certificate and Mars sticker. See www.marsprogram.jpl.nasa.gov/rockworld

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ONLINE VIDEOS ABOUT SPACE

FREE 60-second video shorts called Brain Bites for MS and HS students. Answer questions about space and science – gravity, acceleration, motion, friction, and Newton's Laws. Can be viewed online or downloaded from www.brainbites.nasa.gov Johnson Space Center (JSC) has a variety of videotape formats. For copies of the free videos call Jenna C. Mills, 281/483-9261 or email at jenna.mills-1@nasa.gov and indicate which format you prefer. Currently JSC is producing more videos and a DVD filled with NASA Brain Bites by Fall 2004 – also a CD that can be used in a PowerPoint presentation and educational lessons.

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EARTH SCIENCE WEEK CELEBRATION

“Living on a Restless Earth” is the theme of this year's Earth Science Week October 10-16, 2004 with a focus on the dynamic processes that affect our Earth and may even affect our community. The American Geological Institute and a main sponsor, U.S. Geological Survey, are producing materials and resources for teachers. 204 Earth Science Week information kits cost \$4.95 and include posters, bookmarks, classroom activities, and interactive CDs – for elementary-college – to help you plan your own celebration. To order a kit and subscribe to a free Earth Science Week newsletter see www.earthscienceweek.org

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**For information usually found in the PRECOSEP insert,
please visit:**

www.sacp.org

www.ssp-pgh.org

Thanks to our contributors:

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- ❖ The Pittsburgh Foundation
- ❖ PPG Industries Foundation
- ❖ Spectroscopy Society of Pittsburgh/Society of Analytical Chemists of Pittsburgh (SSP/SACP)
- ❖ University of Pittsburgh
- ❖ Western PA Unit – Herb Society of America



The Pennsylvania NASA Educator resource Center continues to distribute a variety of NASA resources provided through the Goddard Space Flight Center. These include posters, lithographs, bookmarks, teacher guides, and fact sheets. Videotapes are available for viewing and copying, All resources are FREE (except for postage charges for large quantities).

Contact Jane Konrad, Director, for help with resources and workshop plans. 412/648-7315 or email konrad@pitt.edu See the Math/Science Collaborative Journal for a listing of scheduled MARS workshops this summer.

To locate NASA resources available online visit www.pitt.edu/~nasa Many can be downloaded for your use.

