

Science & Technology: A Natural Partnership

METC Conference



Introduction

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Today's Agenda

- Today's Science Classroom
- Role of the Science Teacher
- Services, Tools and Online Resources
 - Research and Development
 - Delivery



Unimaginable Science?

- Do you remember when?
- Science & Technology
 - symbiotic relationship



Today's Kids



Different Types of Learning Environments

Traditional Learning

- Teacher-centered instruction
- Single-sense stimulation
- Single-path progression
- Single media
- Isolated work

New Learning

- Student-centered instruction
- Multi-sensory stimulation
- Multi-path progression
- Multimedia
- Collaborative work

National Educational Technology Standards for Teachers, ISTE 2000

Different Types of Learning Environments

Traditional Learning

- Information delivery
- Passive learning
- Factual, knowledge-based learning
- Reactive response
- Isolated, artificial context

New Learning

- Information exchange
- Active/exploratory/inquiry-based learning
- Critical thinking, informed decision making
- Proactive/planned action
- Authentic, real-world context

National Educational Technology Standards for Teachers, ISTE 2000

What Is The Role of the Science Teacher?

- Facilitate the learning process
- Teach the scientific method and key science concepts
- Provide an environment for exploration
- Expose students to real world tools and experiences
- Encourage high-level thinking skills
- Introduce students to online tools and resources
- Expose students to new experiences



How does technology impact student achievement in science?



How can technology have a greater impact on learning?



- **Aligning of the stars:** It depends on...
 - What outcomes are targeted
 - How technology is integrated into instruction
 - How teachers assess student performance
 - How teachers adjust instruction
- **Let's look at some resources that impact instruction and learning!**

What technology tools, services and resources are available?



Take Your Pick

- **Planning**
- **Searching**
 - Searching Tools
- **Research/Development**
 - Organizations
 - Lesson Plans
 - Project Warehouses
 - Tools
 - Website Authoring
 - Productivity
 - Assessments
 - Pre and post
 - Assess progress
- **Delivery**
 - Instructional Tools
 - Learning Tools
 - Project Tools
 - Communication
 - Collaboration
 - Sharing Data
 - General Resources
- **Professional Development**



Research & Development



Good Place to Begin

- National Science Teachers Assoc.
 - <http://www.nsta.org>
 - Workshops, presentations and resources



National Perspective

- Edutopia (George Lucas Foundation)
 - Online info and resources for innovative teaching
 - <http://www.edutopia.org/>
 - Teaching Modules
 - Video gallery
 - Case studies
 - Online community



Data Transparency

- Just for the Kids
 - <http://www.just4kids.org/en/texas/>
- Strengths of this site
 - Provides “opportunity gap” info
 - Has Best Practices information
 - Gives concrete examples of school implementation

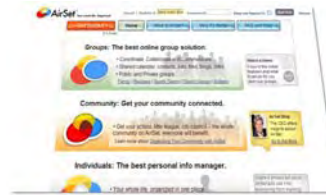
Building a Science Community

- Weebly
 - <http://www.weebly.com/>
 - WYSIWYG (what you see is what you get) website building tool for non-techies offers a one-step process for adding online content.
 - Add RSS feed readers that will display headlines that link back to the latest posts on your favorite blogs



Communication and Collaboration

- Airset
 - www.airset.com
 - Setting up a learning community



Communication and Collaboration

- Windows Live
 - <http://get.live.com/WL/all>



Online Science Resources

- NASA for Kids
 - <http://kids.msfc.nasa.gov/>
- NASA for Students (5-8)
 - <http://www.nasa.gov/audience/forstudents/5-8/features/index.html>



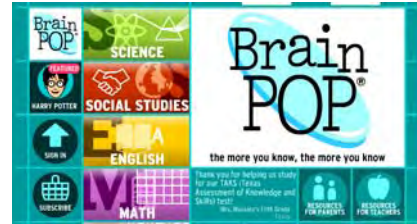
Virtual Museums

- Smithsonian Institute
 - For students
 - <http://www.smithsonianeducation.org/students/>
 - For Teachers
 - <http://www.smithsonianeducation.org/educators/>



Online Curriculum

- BrainPOP
 - <http://www.brainpop.com/>



Online Learning for Students

- Exploratorium
 - <http://www.exploratorium.edu>



Virtual Experiments

- Schlumberger Labs
 - http://www.seed.slb.com/en/scictr/lab/index_virtual.htm



Online Experiments

- EdHeads
 - <http://www.edheads.org/index.htm>



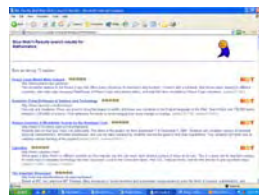
Assessment Generators

- 4Teachers.org
 - <http://4teachers.org/>
 - Teachers' resources and tools site



Online Science Projects

- Blue Web'n
 - <http://www.kn.pacbell.com/cgi-bin/listApps.pl?Mathematics>
 - Lesson plans
 - Hotlists
 - Activities
 - Projects



Online Science Curriculum

- Kathy Schrock's Guide to Science
 - <http://school.discovery.com/schrockguide/science.html>
 - Lesson plans
 - Web resources



Online Instructional Resources

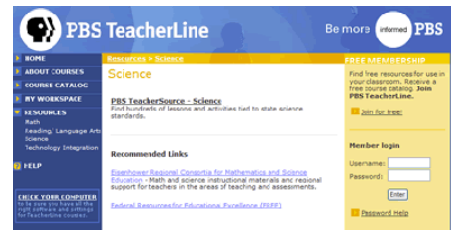
■ PBS TeacherSource

- http://www.pbs.org/teachersource/sci_tech.htm
- Lesson plans
- Web resources
- Best practices



PBS TeacherLine: Science

Free online resources
<http://teacherline.pbs.org/teacherline/resources/science.cfm>



Online Tool: Always Site Your Source

■ Slate Citation Machine

- <http://citationmachine.net/>



Assessment

*"When the cook tastes the soup,
that's formative. When the guests
taste it, that's summative!"*

• Robert Stake

Types of Assessment Tools

- Observations
- Authentic assessment
 - Rubrics
- Exit cards
- Self and peer assessment
- Interviews
- Record keeping
- And more...



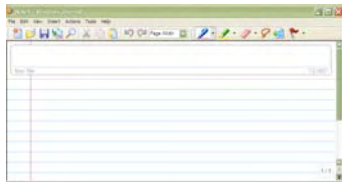
Teacher Tools

- 4Teachers.org
 - www.4teachers.org



Windows Journal: Assessment

- Windows Journal enables you to take notes in your own handwriting via a pen.
- You can vary the size and color of the pen point, change it to a highlighter, and change it to an eraser - all with a tap of the pen.



Delivery



Student Collaboration Tools

- Google Docs

- <https://www.google.com/accounts/ServiceLogin?service=writely>



Virtual Math Manipulatives

- National Library of Virtual Manipulatives

- <http://nlvm.usu.edu/en/nav/vlibrary.html>



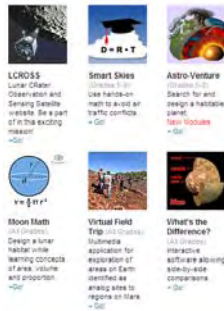
Online Science Projects

- Problem-solving activities

- NASA Quest

- Web-based, interactive explorations designed to engage students in authentic scientific and engineering processes.

- <http://quest.nasa.gov/>



Plug & Play Science Projects

- Keypals

- electronic pen pals
 - ePals

- www.epals.com

- Data Collecting

- two or more classes
 - study a common topic
 - share information or their findings

- Example:

- Project FeederWatch
 - <http://birds.cornell.edu/PFW/>



Plug & Play Science Projects

- Collaborative Projects
 - study a common topic
 - share information or their findings
 - Real time data
 - Collaborative projects
 - Example:
 - CIESE Collaborative Projects
 - <http://www.k12science.org/currichome.html>

Online Learning

- HippoCampus
 - High school level
 - <http://www.hippocampus.org/>



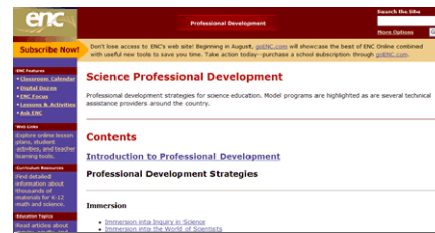
Understanding the Technology

The Internet is a great way to get on
the Net.

--Bob Dole

ENC Professional Development

- <http://www.enc.org/professional/learn/ideas/science/>



PD Services

- Harcourt Connected Learning
 - www.harcourtcl.com
- PBS Teacherline
 - <http://teacherline.pbs.org/teacherline/>
- Teachscape
 - <http://www.teachscape.com/html/ts/public/html/index.htm>

NSTA Professional Development

- <http://www.nsta.org/professionalinfo>
- Workshops, presentations and resources



Thank you for attending!

