Maine Science Teachers Association
Annual Conference

Gardiner Area High School
October 8, 2004

N C B L

Fall 2004 Conference Program

http://www.mainescienceteachers.org

Dear Maine Science Educators,

The MSTA board invites you to join your colleagues from around the state for the anuual Maine Science Teachers Association Conference. The schedule of activities are listed below. We have included a matrix with the strands and sessions. If you have any questions, please contact me at mwhitten@sad11.k12.me.us. We look forward to seeing you at Gardiner Area High School on October 8th.

Sincerely,
Mary Whitten, 2004 Conference Chair

MSTA Annual Fall Conference Schedule

October 8, 2004 – Gardiner Area High School

Registration 7:30 - 8:30 – Main Lobby
Morning Refreshments – Main Lobby

MSTA Annual Membership Meeting 8:20 – 8:30
All are welcomed amd encouraged to attend. - A door prize will be given.

Opening Remarks and Presentation of Awards 8:30 - 8:45
Page Keeley, 2003-2004 President, MSTA
Presentation of the Phil Marcoux to Edward Gleason
Presentation of the Louis Lambert to Steve Whitney, Asa Gordon Middle School
Introduction of NSTA Representative, David White

Special Presentation: 8:45 – 9:45
The Iron Science Teacher

Session 1 - Workshops and Presentations
Special Session Speaker 10:00 – 11:00
Robert Marvinney – Maine State Geologist
"The Geology of Maine"

Session 2 – Workshops and Presentations
Special Session Speaker 11:15 – 12:15
Grace Eason & Andrea Freed
"Concept Cartoons"
Lunch #1: 11:15 – 12:15 * Cafeteria
Please note: There will be a choice of bag or cafeteria style lunches.

Session 3 – Workshops and Presentations
Special Session Speaker 11:15 – 12:15
Donna Young
Why Teach Astronomy?
Poster Session

Lunch #2: 12:30 – 1:30 * Cafeteria
NNCEN & Governor's Academy Cohort 1 & 2 Luncheon
Please note: There will be a choice of bag or cafeteria style lunches.

Session 4 – Workshops and Presentations
Special Session Speaker 1:45 –2:45
Pam Buffington, Ph.D
Technology Integrated Mathematics & Science

Door Prizes & Wrap Up: 2:50

Exhibitors will be located in the cafeteria throughout the day. Discounts will be offered to all participants at the NSTA Bookstore in the cafeteria.

Please visit the MSTA website at www.mainescienceteachers.org for more information about each of the conference sessions.

MSTA Fall 2004 Convention *Strand & Session Matrix*

Strand	(8:45-9:45)	#1 (10:00-11:00)	#2 (11:15-12:15) Lunch 1 - Cafeteria	#3(12:30-1:30) Lunch 2 - Cafeteria Poster Session NNCEN & Governor's Academy Cohort 1 & 2 Luncheon	#4 (1:45-2:45)
	Special Presentation Iron Science Teacher	**Featured Speaker Robert Marvinney The Geology of Maine Gr. K-12**	**Featured Speaker Grace Eason & Andrea Freed Concept Cartoons Gr. 7-12**	**Featured Speaker Donna Young Why Teach Astronomy? Gr. K-12**	**Featured Speaker Pam Buffington, Ph.D Technology Integrated Mathematics & Science Gr. 9-12**
Assessment		Using Benchmarks and Data from Local Assessment Development Field Test Gr. K-4 Beth Beyers-Small, Debra McIntyre & Jill Rosenblum, MMSA Assessing the Learning Results in Science and Technology Using the MEA Gr. 9-12 Tom Keller, Maine DOE	Using Benchmarks and Data from Local Assessment Development Field Test Gr. 5-8 Beth Beyers-Small, Debra McIntyre & Jill Rosenblum, MMSA	ABC's of Assessment: A Sequential Approach to Teaching Ecology Gr. 5 - 8 Kim Schutsky, Ferry Beach Ecology School; Alex Grindle, Ferry Beach Ecology School Room: Using Benchmarks and Data from Local Assessment Development Field Test Gr. 9-12 Beth Beyers-Small, Debra McIntyre & Jill Rosenblum, MMSA	Probing for Students' Ideas in Science Gr. K – 12 Francis Eberle & Page Keeley, MMSA Assessment Reliability - Consistency and Accuracy Gr. K-12 Jill Rosenblum, MMSA
Environmental Science		Project WILD Aquatic (Session 1 of 3) Gr. K-12 Lisa Kane, Project Wild Students & Scientists Together - A New Look at GLOBE Gr. K - 12 Henrietta List, MMSA Investigating Sources of School Yard Pollution Gr. 9-12 Barb Welch & Christine Smith, Maine DEP	National Geographic Society's Geography Action! Habitat: Home Sweet Home Gr. K-12Joanne Alex, Stillwater Montessori School Project WILD Aquatic (Session 2 of 3) Gr. K-12 Lisa Kane, Project Wild	Project WILD Aquatic (Session 3 of 3) Gr. K-12 Lisa Kane, Project Wild International Environ-mental Change Workshop Series – Phase II the Biosphere Gr. 5-12 Deb Avalone-King, Maine DEP Using Vending Misers: An Inquiry Based Math & Science Project Gr. 6 - 12 Laurie Olmstead, Thomaston Grammar School Room:	Mentoring and Encouraging Students with Disabilities to Participate in Science, Technology, Engineering, and Mathematics Gr. K-12 Rob Sanford, USM Quests: Natural History Treasure Hunts Gr. K-8 Deb Avalone-King, Maine DEP; Peter Zack, Maine Energy Education Program Local Libraries, town forest, and Project Learning Tree – and inquiry based study of your local natural world! Gr. K-8 Patricia Maloney, Maine Project Learning Tree; Kevin Doran, Maine Forest Service

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General	**Special Presentation** **Iron Science Teacher**	What Science are Science Teachers Say They are Teaching and What does that Mean for Students? Gr. K-12 Francis Eberle, MMSA Do You Have a New Science Teacher in Your School? Content Mentoring That Can Make a Difference! Gr. 6-12 Sharon Gallant, Gardiner Middle School; Amy Shnur, Gardiner Middle School; Brian Greenlaw, Gardiner High School; Randy Wing, Gardiner High School; Mary Whitten, Gardiner High School CTS and PRISMS - Two New NSF Projects for Maine Science Teachers! Gr. 5-12 Page Keeley & Lynn Farrin, MMSA		Geographic Information Systems: What's all the Buzz About? Gr. K - 12 Henrietta List, MMSA; Bridgit Kirouac, Maine GIS Office NNECN Cohort Meeting for Mentors and Mentees Gr. 5-12 Lynn Farrin, MMSA; Sharon Gallant, Gardiner Middle School Using the National Standards and Maine Learning Results for Unit Planning in the Science Classroom Gr 9-12 Linda D'Apolito, Falmouth High School	Strategies for Improving Communication Between Teachers Gr. K-12 Vincent Johnson, SAD 35 Engaging Students in Grades 4 – 8 in Innovative Materials for Science Literacy Gr. 4-8 Pat Warren, The Presidential Awards for Excellence in Science Teaching Gr. 5 – 12 Tom Keller, Maine DOE
Laboratory		See your middle school students soar with SEP-UP (SALI) Gr. 7-8 Liz Sorrell, Lab-Aids Genes in a Bottle Gr. 5-12 Beth Chagrasulis, Lake Region High School	Investigate Forensic Science Using Simple Lab Activities Gr. K-12 Judy Crosby, DaVinci Experience: Science & Arts Programs; Christy McKinney, DaVinci Experience: Science & Arts Programs Environmental science that all students can use Gr. 9-12 Liz Sorrell, Lab-Aids	Use Chem-2 and all your students will be above average! Gr. 4-6 Liz Sorrell, Lab-Aids	See your middle school student soar with SEPUP (IEY) Gr. 8-9 Liz Sorrell, Lab-Aids Berry Full of DNA Gr 5-12 Beth Chagrasulis, Lake Region High School

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Life Science	**Special Presentation Iron Science Teacher**	Face to Face with Marine Science at the Gulf of Maine Research Laboratory Gr. 5-8 Alan Lishness, Susan Hayhurst,; Tom Farmer, Dana Hutchins; Gulf of Maine Research Institute	Service Learning Through Roots & Shoots Gr. K - 12 Jennifer Gresham, jane Goodall Institute Room:	Integrating Drug Education Into the Science Classroom Gr. 9-12 Rosemarie Smith, Waterville High School; Martha Cobb, Waterville High School; Jody Veilleux, Waterville High School	Using Marine Biology to Demonstrate Concepts in Physics Gr. 7-12 Dennis Levandoski, Greely Jr High School; Peter Jumars, University of Maine
Physical Science and Energy		FOSS Balance and Motion - A physical science module for the primary grades. Gr. K - 2 Cindy Langdon, SAD 60 Our Sun: Energy, Electricity and the Environment Gr. 5-8 Mary Dunn, Hall-Dale Middle School Experience an Exemplary, Inquiry-Based, Physical/Earth Science Module (FOSS Middle :"Weather and Water") Gr. 5 - 8 Christine Anderson-Morehouse, Maine Science Collaborative Model Rocketry Gr. 9 - 12 Mike Weiss, Falmouth High School Room:	Engineering the Future Gr. K-12 Pete Mickleson, Maine Engineering Promotion Council Our Changing Climate: Global Warming/Renewable Energy Gr. 5-8 Chris Coleman, Chewonki Foundation Electrical Energy and the Environment: From Apple Batteries to Energy Patrol Gr. 4-12 Peter Zack, Maine Energy Education Program	Wind Energy Science: Getting your hands on Wind! Gr. 5-8 Michael Arquin, Kidwind Project Active Physics: A Secondary Physics Core Curriculum Gr. 9 - 12 Arthur Germano, It's About Time Publishing	"K'NEXtions" with Forces and Motion Gr. 6-8 Barbara Fortier, Biddeford Middle School Things to do with a Bell Jar Gr. 9-12 Susan Klemmer, Camden Hills Regional High School EarthComm: Earth System Science in the Community Gr. 9 - 12 Arthur Germano, It's About Time Publishing Video Demonstration Lessons Gr. K-12 Steve DeAngelis, Maranacook Community School; Lynn Farrin, MMSA

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Space Science	**Special Presentation** **Iron Science Teacher**	"What's in Space? How do we get there? How would we live there? And is there life in outer space? Using children's questions to design an integrated curriculum. Gr. K-4 Joanne Alex, Stillwater Montessori School Mapping the Invisible Universe Gr. 5-12 Pamela Perry, Chandra X-ray Center; Gary Glick, Chandra X-ray Center; Donna Young, Chandra X-ray Center	Stellar Cycle Gr. 5-12 Pamela Perry, Chandra X-ray Center; Gary Glick, Chandra X-ray Center; Donna Young, Chandra X-ray Center	Specifically Sunspots Gr. 6-8 Barbara Fortier, Biddeford Middle School	Toys in Space Gr. K - 4 Featured Speaker Nancy Chesley, Mabel I Wilson School Want to fly a mission at the Challenger Learning Center? Gr. 5-8 Robyn Kennedy, Challenger Learning Center
Technology		Probeware in the Classroom Gr. 9-12 John Swan, Lewiston High School Mathematical Modeling in Scientific Inquiry Gr. 6-12 Dr. Chuck Kim, University of Maine Machias	What Lake Should We Vacation at This Summer? Gr. 5-12 Christine Smith, Maine DEP Blogging for Science Gr. 5-12 Elizabeth Sky-McIlvain, Least Tern	Cool Free Science Tools and Activities Gr. K-12 Elizabeth Sky-McIlvain, Least Tern Measuring the Circumference of Earth - with GPS! Gr. 9-12 Kelly Welch, Greely High School Using Real Time Data on the Internet to Address Concerns in Secondary School Science Gr. 9-12 Jonah Rosenfield, Waynflete School	Meet Ribit: an Online Inquiry Tool for Science Gr. K-12 Elizabeth Sky-McIlvain, Least Tern QUEST: Science You Can Use Gr. K-8 Barbara Noyes-Pulling, Maine PBS Astronomical Data Analysis Using ds9 Gr.9-12 Pamela Perry, Chandra X-ray Center; Gary Glick, Chandra X-ray Center; Donna Young, Chandra X-ray Center

Strand: Featured Speakers

Iron Science Teacher **Grades: K - 12**
Presenter: Steve DeAngelis, Maranacook Community School
After getting its start at the San Francisco Exploratorium, the Iron Science Teacher competition is coming to a Maine stage for the first time at the MSTA meeting in Gardiner. The Iron Science Teacher competition is a wacky science "cook-off" that parodies the cult Japanese TV show, The Iron Chef. To kick off this year's MSTA conference, Maine science teachers will challenge each other for the revered title of Maine's Iron Science Teacher by creating demonstrations and lessons in different scientific disciplines using the same "secret ingredient." In front of a peer audience and the watchful eyes of celebrity judges, this select group of teachers will develop creative, fast-paced lessons. The audience will then determine the winning teacher, who will be crowned the "1st Evah" Maine Iron Science Teacher and get to don the coveted Iron Science Teacher lab coat. This lively, entertaining science game show should be an energizing way to kick off a great day of learning about science teaching!

The Geology of Maine for K-12 Teachers **Grades: K - 12**
Session: 1
Presenter: Robert Marvinny, Maine Geological Survey
The presentation will include a review of web materials, a review of CREST materials (Curriculum Resources for Earth Science Teachers) and examples of geological field trip localities

Concept Cartoons: Switching Learners onto Science **Grades: 5 - 12**
Session: 2
Presenters: Grace Eason, University of Maine Farmington; Andrea Freed, University of Maine Farmington
Concept cartoons are a new approach to teaching, learning, and assessment in science. They feature cartoon-style drawings showing different characters arguing about an everyday situation. These cartoons are designed to intrigue, to provoke discussion and to stimulate scientific thinking because they may not have a single "right" answer.

Why Teach Astronomy? **Grades: K - 12**
Session: 3
Presenter: Donna Young, Chandra X-ray Center
This session was sparked by the discussion started on the Maine Science Listserv – Do we need to teach Astronomy? This presentation will address why astronomy is important in the K – 12 curriculum and how the contest of space can be used to teach content and processes across the disciplines of science.

Technology Integrated Mathematics and Science: Utilizing data tools in the collection and analysis of real world data. **Grades: 9 - 12**
Session: 4
Presenter: Pam Buffington, Ph.D, EDC
This session is designed to engage participants in an immersion experience using tools for collecting, displaying, interpreting and analyzing real world data for science and math classrooms. It will incorporate the use of probes, sensors, and data analysis software. The session will also include strategies for effective integration of technology.

Strand: Assessment

Assessing the Learning Results in Science and Technology Using the Maine Educational **Grades: K - 12**
Session: 1
Presenter: Tom Keller, Maine DOE
This session will highlight the design specifications of the MEA, the process of item development, and address reports that are sent to local educational agencies. The session will start with the basics, and then address as many questions as you have that I can answer.

Using Benchmarks &Data from Local Assessment Development Field Test Grades: K - 4
Session: 1
Presenters: Beth Beyers-Small, MMSA; Debra McIntyre, MMSA; Jill Rosenblum, MMSA
The team will offer grade appropriate sessions focusing on science assessment. The team will share how data and student work that has been benchmarked through the Local Assessment Development (LAD) field test can be used to improve instruction, assess student performance and develop reliable scoring.

Using Benchmarks & Data from Local Assessment Development Field Test Grades: 5 - 8
Session: 2
Presenters: Beth Beyers-Small, MMSA; Debra McIntyre, MMSA; Jill Rosenblum, MMSA
The team will offer grade appropriate sessions focusing on science assessment. The team will share how data and student work that has been benchmarked through the Local Assessment Development (LAD) field test can be used to improve instruction, assess student performance and develop reliable scoring.

Using Benchmarks & Data from Local Assessment Development Field Test Grades: 9 - 12
Session: 3 **Room:** **Needs:** Overhead Projector
Presenters: Beth Beyers-Small, MMSA; Debra McIntyre, MMSA; Jill Rosenblum, MMSA
The team will offer grade appropriate sessions focusing on science assessment. The team will share how data and student work that has been benchmarked through the Local Assessment Development (LAD) field test can be used to improve instruction, assess student performance and develop reliable scoring.

ABC's of Assessment: A Sequential Approach to Teaching Ecology Grades: 5 - 8
Session: 3
Presenters: Kim Schutsky, Ferry Beach Ecology School; Alex Grindle, Ferry Beach Ecology School
From pre-field trip diagnostic activities, to landscape ecology studies outdoors, to concluding classroom projects, learn how assessment can be used as an effective and cumulative tool for gauging ecology and science literacy.

Probing for Students' Ideas in Science Grades: K - 12
Session: 4
Presenters: Francis Eberle, MMSA; Page Keeley, MMSA
This session will share formative assessment strategies for examining student thinking. We will share examples of probes developed for the soon-to-be published MSTA book, "Probing Students' Ideas in Science – Volume I" as well as look at student work and interviews with students.

Strand: Environmental Science

Investigating Sources of School Yard Pollution Grades: 9 - 12
Session: 1
Presenters: Barb Welch, Maine DEP; Christine Smith, Maine DEP
Use the Envirothon 2001 Special Topic as a culminating activity and assessment to engage your students in becoming responsible and involved citizens. As a group they will be assessing possible sources of non-point source pollution on school grounds, the threat to the school's drinking water, and the effect the school has on downstream areas.

Students & Scientists Together - A New Look at GLOBE Grades: K - 12
Session: 1
Presenter: Henrietta List, MMSA
Scientists and students together examining earth systems interactions makes the GLOBE program a unique opportunity for classrooms. MMSA is pleased to be able to provide teachers with support in implementing this program. Find out about the wide variety of studies students can now do as part of GLOBE.

Project WILD Aquatic (Session 1 of 3) Grades: K - 12
Session: 1
Presenter: Lisa Kane, Project Wild
Project WILD is a hands-on wildlife and conservation education activity guide for grades K - 12. Project WILD Aquatic focuses on aquatic wildlife and their habitats with over 40 easily integrated, multidisciplinary activities, aligned with the MLR's. Participants must attend the full 2.5 hour session to receive the activity guide, posters, prizes and other supplemental handouts.

National Geographic Society's Geography Action! Habitat: Home Sweet Home **Grades: K - 12**
Session: 2
Presenter: Joanne Alex, Stillwater Montessori School
In this session you will be introduced to the world's ecoregions, the NGS website and the Bangor Daily News NIE Series on Maine's Diverse Habitats protected by the National Wildlife Refuge System. I will share ways to integrate hands-on activities into your curriculum and give students opportunities to become Habitat Heroes. It is a great Service Learning Opportunity for your students as they meet the National and State Standards for science and geography. There will be resources and handouts to get you started.

Project WILD Aquatic (Session 2 of 3) **Grades: K - 12**
Session: 2
Presenter: Lisa Kane, Project Wild
This session will report statewide data from the Survey of enacted Curriculum for what science and practices Maine teachers say they are doing. Additionally, the identification of statewide patterns, gaps and trends will be explored to show how this informs improving science education at the classroom school and district levels.

Project WILD Aquatic (Session 3 of 3) **Grades: K - 12**
Session: 3
Presenter: Lisa Kane, Project Wild
This session will report statewide data from the Survey of enacted Curriculum for what science and practices Maine teachers say they are doing. Additionally, the identification of statewide patterns, gaps and trends will be explored to show how this informs improving science education at the classroom school and district levels.

International Environmental Change Workshop Series – Phase II the Biosphere **Grades: 5 - 12**
Session: 3
Presenter: Deb Avalone-King, Maine DEP
oin us to take a look at the scientific and teaching tools that are available to Maine teachers for studying the biosphere (living things) of Earth. Learn about how the Maine team and teachers from around the world are investigating environmental change through classroom instruction and hands-on involvement in current scientific field and/or laboratory research.

Using Vending Misers: An Inquiry Based Math & Science Project **Grades: 5 - 12**
Session: 3
Presenter: Laurie Olmstead, Thomaston Grammar School
Learn how to implement an inquiry based project using Vending Misers to help students investigate the environmental impact of energy production and how they can help their school district save money. Students use math and science to create a way to share their information with the community.

Local Libraries, town forest, and Project Learning Tree – and inquiry based study of your local natural world! **Grades: K - 8**
Session: 4
Presenters: Patricia Maloney, Maine Project Learning Tree; Kevin Doran, Maine Forest Service
Head to the library, take to the woods and let the questions fly because your students are practicing inquiry-based learning! How? Your town or school librarian can get over 200 books related to the natural world in our community. Your town forest offers an outdoor lab for hands-on scientific inquiry and process BUT most of all your students love the outdoors! PLT activities link it all together in this session. Links to learning results and lists of trade books available!

Quests: Natural History Treasure Hunts **Grades: K - 8**
Session: 4
Presenters: Deb Avalone-King, Maine DEP; Peter Zack, Maine Energy Education Program
Join us for an introduction to intriguing educational treasure hunting using art, navigation and poetry! Creating hand-drawn maps and riddle0like clues, find hidden special places, such as remote lakes, old cellar holes, favorite trees and forgotten cemeteries. Questions are a perfect student activity for lining natural science, geography and literacy.

Mentoring and Encouraging Students with Disabilities to Participate in Science, Technology, Engineering, and Mathematics **Grades: K - 12**
Session: 4
Presenter: Rob Sanford, USM
Environmental sciences present wonderful opportunities for field and laboratory experiences. But how do we get K – 16 students involved? In this facilitated roundtable discussion, we all share stories, experience, challenges, and discuss success strategies. I will also share information about the EAST grant program. USM has encourage efforts in this regard (available to teachers in NH, VT, and ME), and tales from our past NSF and NASA-funded projects in this area ("ACCESS Earth" and "Biotechnology Works!").

Strand: General

What Science are Science Teachers Say They are Teaching and What does that Mean for Students? **Grades: K - 12**
Session: 1
Presenter: Francis Eberle, MMSA
This session will report statewide data from the Survey of enacted Curriculum for what science and practices Maine teachers say they are doing. Additionally, the identification of statewide patterns, gaps and trends will be explored to show how this informs improving science education at the classroom school and district levels.

CTS and PRISMS - Two New NSF Projects for Maine Science Teachers! **Grades: K - 12**
Session: 1
Presenters: Page Keeley, MMSA; Lynn Farrin, MMSA
This session will feature two new National Science Foundation Projects awarded to the Maine Mathematics and Science Alliance. CTS is a set of powerful new tools, to be published in March, to help science teachers utilize national standards and research to inform teaching and learning. We will share how these tools provide the "missing link" for implementing Learning Results and transforming professional development. PRISMS – Phenomena and Representations for Instruction of Science in Middle Schools is a partnerships with the American Association for the Advancement of Science to develop a collection of science objects, aligned to the Project 2061 Benchmarks, identified by Maine's laptop teacher, for the National Science Digital Library. Participants will learn how thy can get involved in both of theses exciting, new projects.

Do You Have a New Science Teacher in Your School? Content Mentoring That Can Make a Difference! **Grades: 5 - 12**
Session: 1
Presenters: Sharon Gallant, Gardiner Middle School; Amy Shnur, Gardiner Middle School; Brian Greenlaw, Randy Wing & Mary Whitten, Gardiner High School
Teaching has its wonderful and difficult times. Think about the difficulties for a new teacher during these times of changing to standards based system and NCLB. This session will take a look at the content mentoring in science: how is it different and our successes. We have been involved in the NNECN (Northern New England Co-Mentoring Network) NSF funded project. We will share the resources that we have used. Several of the resources we have used will be given as door prizes at the end of the session.

Using the National Standards and Maine Learning Results for Unit Planning in the Science Classroom **Grades: 9 - 12**
Session: 3
Presenter: Linda D'Apolito, Falmouth High School
Using Benchmarks, and the Atlas, I will show teachers how to "unpack" the Learning Results with Page Keeley's Topic Study. We will then plan a science unit using Jay McTighe's Design Backwards techniques. We have been using this format in our high school life science classroom for two years at Falmouth High School. It has allowed us to streamline the time issue for our life science curriculum and, by recognizing student misconceptions and focusing on the "essential questions" we have been able to use instructional time well. Students seem to get "the Big Ideas."

NNECN Cohort Meeting for Mentors and Mentees **Grades: 5 - 12**
Session: 3
Presenters: Lynn Farrin, MMSA; Sharon Gallant, Gardiner Middle School
This is an invitation only meeting for all members of the Cohort I and Cohort II NNECN project. Bring your lunch, we'll provide punch and a fabulous dessert buffet, as we continue our work in creating a network of excellence in teaching.

Geographic Information Systems: What's all the Buzz About? **Grades: K - 12**
Session: 3
Presenters: Henrietta List, MMSA; Bridgit Kirouac, Maine GIS Office
GIS, GPS is it helpful to students? Geographic Information Systems (GIS) are one of the fastest growing fields in technology. They allow students to create and query maps with any set of data that has geographic references. Learn more about this tool including a new OSX version of ArcView.

The Presidential Awards for Excellence in Science Teaching **Grades: 5 - 12**
Session: 4
Presenter: Tom Keller, Maine DOE
This is the premier award for science teaching excellence. A national awardee from each state receives a $10,000 grant paid directly to him or her among other recognitions. The application form and scoring guides will be dissected and helpful hints offered.

Strategies for Improving Communication Between Teachers **Grades: K - 12**
Session: 4
Presenter: Vincent Johnson, SAD 35
Why is it difficult to communicate well with other teachers and schools? Multi-grades study groups are one strategy that has been successfully used in MSAD #35. The focus is on science education and increasing the progression of understanding in science for our students. The study groups contain teachers from different schools and grades. Other strategies (Curriculum Topic Study, Book Study, Lesson Study, Demonstration Lessons, etc) that can help study groups become more effective will be introduced.

Engaging Students in Grades 4 – 8 in Innovative Materials for Science Literacy **Grades: 4 - 8**
Session: 4
Presenter: Pat Warren,
High-interest reader response resources used to engage students in Science Literacy thru activities that connect science to the real world. These are developed with the NSTA and aligned to the NSTA standards.

Strand: Laboratory

Genes in a Bottle **Grades: 5 - 12**
Session: 1
Presenter: Beth Chagrasulis, Lake Region High School
Your students can capture, preserve, and even wear their own DNA! With this BioRad kit, students gain practical knowledge by conducting a real-world lab procedure that is used to extract DNA from many different organisms for a variety of applications. Your students will extract genomic DNA from their own cheek cells and watch it precipitate from solution. The strands are then easily collected and transferred to a glass vial and the vial is fashioned into a necklace.

See your middle school students soar with SEP-UP (SALI) **Grades: 5 - 8**
Session: 1
Presenter: Liz Sorrell, Lab-Aids
See students. See students suffer in science class. See SEPUP scenarios use societal issues to stimulate students' curiosity and interest. See standards-based support to inquiry, literacy, and assessment. See states select and adopt SEPUP. See students smile as they successfully soar with SEPUP.

Environmental science that all students can use **Grades: 9 - 12**
Session: 2
Presenter: Liz Sorrell, Lab-Aids
Nothing wrong with eating granola, hugging a tree now and then, or cleaning up the occasional oil spill. But environmental science these days means a lot more. Science and Sustainability is the new high school course from SEPUP that uses global issues to interest and motivate students. Strong support for content, inquiry, literacy, and assessment is provide. Join us for a hands-on overview.

Investigate Forensic Science Using Simple Lab Activities **Grades: K - 12**
Session: 2
Presenters: Judy Crosby, DaVinci Experience: Science & Arts Programs; Christy McKinney, DaVinci Experience: Science & Arts Programs
Learn how to set up a Crime Lab in your classroom. Use chemistry to analyze evidence and biology to learn more about a crime. Participate in hands-on activities using observation and creative thinking to investigate crimes. Try some of the experiments from our most popular DaVinci Experience summer science program.

Use Chem-2 and all your students will be above average! **Grades: 5 - 8**
Session: 3
Presenter: Liz Sorrell, Lab-Aids
The CHEM-2 program consists of 15 units of activity-based science for students in grades 4 to 6. All units are developed at the Lawrence Hall of Science. CHEM-2 activities draw from the life, physical, and earth sciences, support literacy skill, and re motivating, engaging, and fun. To make it any easier, we'd have to come to your class and teach it for you!

See your middle school student soar with SEPUP (IEY) **Grades: 5 - 8**
Session: 4
Presenter: Liz Sorrell, Lab-Aids
See students. See students suffer in science class. See SEPUP scenarios use societal issues to stimulate students' curiosity and interest. See standards-based support to inquiry, literacy, and assessment. See states select and adopt SEPUP. See students smile as they successfully soar with SEPUP.

Berry Full of DNA **Grades: 5 - 12**
Session: 4
Presenter: Beth Chagrasulis, Lake Region High School
This simple DNA extraction results in beautiful, white, spoolable DNA. It is so easy there is almost no way for students to make a mistake. It is much more effective than extracting DNA from any other source. You will never eat a strawberry again without thinking about how much DNA is in it.

Strand: Life Science

Face to Face with Marine Science at the Gulf of Maine Research Laboratory **Grades: 5 - 8**
Session: 1
Presenters: Alan Lishness, Gulf of Maine Research Institute; Susan Hayhurst, Gulf of Maine Research Institute; Tom Farmer, Gulf of Maine Research Institute; Dana Hutchins, Gulf of Maine Research Institute
The Gulf of Maine Research Institute is opening its doors to 5th and 6th grade classes. During hands-on investigations at digital exhibits, students will explore marine science topics in the laboratory. Join us to find out more and discuss your ideas for post-visit website activities that link to your curriculum.

Service Learning Through Roots & Shoots **Grades: K - 12**
Session: 2
Presenter: Jennifer Gresham, jane Goodall Institute
Explore this service – learning based global environmental and humanitarian education program for youth. See how Roots & Shoots and the Jane Goodall Institute can help you make science learning exciting and real. Participants will investigate science across the curriculum in a real – world inquiry setting as they explore how Roots & Shoots connects science education with service – learning.

Integrating Drug Education Into the Science Classroom **Grades: 9 - 12**
Session: 3
Presenters: Rosemarie Smith, Waterville High School; Martha Cobb, Waterville High School; Jody Veilleux, Waterville High School
Three veteran teachers of chemistry, biology, and anatomy and physiology will present several short lesson inserts (5 to 10 minutes long) which can be used in these science classes to teach the pharmacology and physiology associated with many of the drugs popular among teens today. These have been taken from the 6 more extensive modules(available online) developed at Duke University by the Pharmacology Education Partnership and funded by a NIDA Science Education Drug Abuse Partnership Award.

Using Marine Biology to Demonstrate Concepts in Physics **Grades: 5 - 12**
Session: 4
Presenters: Dennis Levandoski, Greely Jr High School; Peter Jumars, University of Maine
Students must learn important physical laws, but should also understand that these laws apply to living things. The presenters have been working at making physical science meaningful at middle and high school levels by demonstrating how marine organisms interact with the physical environment. The presents will share some of their work with connections to Maine Learning Results.

Strand: Physical Science and Energy

Our Sun: Energy, Electricity and the Environment **Grades: 5 - 8**
Session: 1
Presenter: Mary Dunn, Hall-Dale Middle School
Energy is one of the top environmental issues facing our nation at this time and undoubtedly will be for a long time to come. This workshop connects teaching/learning about energy starting with the sun. It includes energy in several forms; it's effect on our planet's magnetosphere, through our food chain, as a natural resource and in particular as a viable renewable energy source. The making, using, and conserving of electricity is included and how the production and use of energy for electricity affects our environment. This unit integrates earth, life, physical, and space science into a year long study for middle school students.

FOSS Balance and Motion - A physical science module for the primary grades. **Grades: K - 4**
Session: 1
Presenter: Cindy Langdon, SAD 60
Come explore the module! This session provides an overview of the Full Option Science System by exploring one kit, Balance and Motion. Look at the materials and try some of the investigations

Experience an Exemplary, Inquiry-Based, Physical/Earth Science Module (FOSS Middle :"Weather and Water") **Grades: 5 - 8**
Session: 1
Presenter: Christine Anderson-Morehouse, Maine Science Collaborative
"Weather and Water" uses the earth science of weather to introduce and to apply many physics concepts. Learn about hands-on investigations, on-line resources and multi-media simulations that support understanding of phenomena and abstract concepts. Students develop and use literacy skills to communicate and to clarify thinking. Concepts addressed: properties of earth's atmosphere and processes that produce weather (including energy transfer, atmospheric gases, atmospheric pressure, water cycle, heat, solar energy/seasons, radiation, conduction, convection, density, pressure, climate and more). Concept application involves analyzing local and global weather data using instruments and media reports.

Model Rocketry **Grades: 9 - 12**
Session: 1
Presenter: Mike Weiss, Falmouth High School
Model rocketry can be used to excite kids to science and math concepts. Students build and fly rockets and write a lap report which uses Newton's Laws of Motion, spreadsheets, and the Law of Sines to explain student findings. A student lab manual filled with tips, suggestions and format information will also be discussed.

Electrical Energy and the Environment: From Apple Batteries to Energy Patrol **Grades: 5 - 12**
Session: 2
Presenter: Peter Zack, Maine Energy Education Program
It's electric! Participants will produce electricity with apple batteries and PV module, discuss real world electrical generation and its environmental consequences and learn how to establish a student Energy Patrol (4 - 8) or to undertake the Vending Miser Challenge (7 -12) to monitor school electricity consumption. All activities are linked to the Maine Learning Results.

Engineering the Future **Grades: K - 12**
Session: 2
Presenter: Pete Mickleson, Maine Engineering Promotion Council
Maine's Engineering Promotion Council shows students an authentic rationale for learning: where they can create and contribute to a better world through applying the principles of science, math, language and history to the ever-evolving processes of technology - how people meet their needs and wants. Come learn what we do.

Our Changing Climate: Global Warming/Renewable Energy **Grades: 5 - 8**
Session: 2
Presenter: Chris Coleman, Chewonki Foundation
The 10 warmest years on record have occurred since 1983, seven of them since 1990. Global temperatures in 1998 were the hottest in the past 5 million years. These simple facts have inspired the Chewonki Center for Environmental Education to develop a few resources to assist educators in their attempts to teach the youth of Maine about the issue. This hour long presentation will give a sampling of our two-part presentation entitled "Our Changing Climate: Global Warming and Renewable Energy." You will also be introduced to a newly developed poster designed to make students aware of the options for sustainable forms of energy such as hydropower, biomass, wind, solar, and hydrogen. By going to Chewonki's website, www.chewonki.org, teachers and students can enjoy an interactive experience that will open doors to other websites just by clicking on different parts of a digital version of the very same poster. All attendees will receive a free poster.

Active Physics: A Secondary Physics Core Curriculum **Grades: 9 - 12**
Session: 3
Presenter: Arthur Germano, It's About Time Publishing
Active Physics is an inquiry-based high school physics course. Students will learn about physics on a need-to-know basis through hands-on exploration of interesting topics. A National Science Foundation supported curriculum and created under the auspices of the AAPT and the AIP. Take home activities provided.

Video Demonstration Lessons **Grades: K - 12**
Session: 4
Presenters: Steve DeAngelis, Maranacook Community School; Lynn Farrin, MMSA
Steve will share his videotaped inquiry-based high school lesson on energy and talk about the value of using video-taped lessons to learn more about teaching strategies and student learning. The model used for observing video lessons is applicable K – 12.

Wind Energy Science: Getting your hands on Wind! **Grades: 5 - 8**
Session: 3
Presenter: Michael Arquin, Kidwind Project
Wind power has captured the public imagination with its simplicity and elegance. Dig deeper into the wind and introduce your students to the science behind the fastest growing energy resource in the world.
Participants will learn basic principles behind wind energy using standards-based activities in an engaging manner.

Things to do with a Bell Jar **Grades: 9 - 12**
Session: 4
Presenter: Susan Klemmer, Camden Hills Regional High School
Explore ways to use a vacuum pump and bell jar to teach, apply, and assess concepts related to the gas laws and changes of state. Along the way, we'll examine the broader issue of how to effectively use single pieces of equipment in demonstrations, labs, and tests. Handouts provided.

"K'NEXtions" with Forces and Motion **Grades: 5 - 8**
Session: 4
Presenter: Barbara Fortier, Biddeford Middle School
This session will focus on using K'NEX to engage students in hands-on activities to learn about forces and motion. Connections will be made between the K"NEX sets used in the classroom and their technology counterparts in the real world. Information will also be provided on how to obtain funding for classroom materials.

EarthComm: Earth System Science in the Community **Grades: 9 - 12**
Session: 4
Presenter: Arthur Germano, It's About Time Publishing
EarthComm was developed by the American Geological Institute to address both the National Science Education Standards and the AAAS Benchmarks. Using a systems-based approach to Earth Science, EarthComm strongly emphasizes student research into the relevance of Earth Science to their communities. Take home activities provided.

Strand: Space Science

Mapping the Invisible Universe **Grades: 5 - 12**
Session: 1
Presenters: Pamela Perry, Chandra X-ray Center; Gary Glick, Chandra X-ray Center; Donna Young, Chandra X-ray Center
In this activity, participants will use a detector to measure invisible electromagnetic radiation in a given area. These numerical measurements will then be transferred to a grid, where numbers are binned and images are created in a method similar to the one scientists use with Chandra X-Ray Observatory data.

"What's in Space? How do we get there? How would we live there? **Grades: K - 4**
And is there life in outer space? Using children's questions to design an integrated curriculum.
Session: 1
Presenter: Joanne Alex, Stillwater Montessori School
In today's world, astronauts, the space shuttle, and galaxies are household words. I will share how to create meaningful integrated curriculum using space as our theme, to meet the State and national Standards not only in science but other core content areas as well. This workshop will include hands-on activities and suggested books that will pique children's curiosity, answer their questions about apace and inspire them to take care of planet Earth.

Stellar Cycle **Grades: 5 - 12**
Session: 2
Presenters: Pamela Perry, Chandra X-ray Center; Gary Glick, Chandra X-ray Center; Donna Young, Chandra X-ray Center
A hands-on activity will be presented where students organize given color images into a slide show describing stellar evolution. Materials and references will be provided.

Specifically Sunspots **Grades: 5 - 8**
Session: 3
Presenter: Barbara Fortier, Biddeford Middle School
This session will focus on using sunspot observations to calculate the rotational period of the sun, forecast aurora, a engage students in authentic scientific research. Participants will learn to use a sunspotter and will learn a variety of ways to integrate it into their curriculums. This session will also include information on how to apply for the Teacher Leader in Research-Based Science Education Program at Kitt Peak National Observatory in Arizona during the summer of 2005.

Want to fly a mission at the Challenger Learning Center? **Grades: 5 - 8**
Session: 4
Presenter: Robyn Kennedy, Challenger Learning Center
The Challenger Learning Center opened its doors to Maine middle school students in March 2004. At the center, students participate in a 2.5 hours space simulation, working in teams as engineers and scientists. Teachers prepare their students with MLR aligned curriculum materials provided by the center. Hear more and try your hand at a student activity! www.clcofme.org

Toys in Space **Grade K-4**
Session: 4
Presenter: Nancy Chesley, Mabel I Wilson School
Toys in Space is a workshop for K-4 teachers to learn how to use toys to teach concepts of motion (Standard I of the Maine learning Results). It is designed to incorporate an instructional model (The Learning Cycle), and all participants will receive a copy of the unit.

Strand: Technology

Mathematical Modeling in Scientific Inquiry **Grades: 9 - 12**
Session: 1
Presenter: Chuck Kim, University of Maine Machias
Using mathematical modeling based on computer technology as a tool in science education, we will explore inquiry method in processing scientific data and constructing big ideas in science. These types of hands-on activities can make mathematics and science not only meaningful but also interesting.

Probeware in the Classroom **Grades: K - 8**
Session: 1
Presenter: John Swan, Lewiston High School
This session will emphasize probes and experiments that can be used in routine lab exercise. Vernier Software probes will be demonstrated, but the discussion will apply to any vendor's probeware. Probes that will be shown include pH, pressure, temperature, conductivity, and radiation.

Blogging for Science **Grades: 5 - 12**
Session: 2
Presenter: Elizabeth Sky-McIlvain, Least Tern
The weblog is an online tool for journaling. Its popularity as a collaboration and creative writing tool in the English/Language Arts classroom is growing, but few teachers are using it for science observations and lab reports. A simple, free tool for the creation of science weblogs, containing text, images and even media elements, will be introduced and "tried out" in this hands-on workshop. A few friendly HTML tags will be taught. Apple laptop users can explore the relationship between MacJournal (free) and Blogger.
Participants will need an accessible e-mail address. They are encouraged to bring digital cameras (and USB cables), cellphones and iBooks.

What Lake Should We Vacation at This Summer? **Grades: 5 - 12**
Session: 2
Presenter: Christine Smith, Maine DEP
Teachers, come learn how to download real-life water quality data for lakes in Maine from the PEARL website! Specific lesson plans and assessment rubrics will be shared to help students graph and interpret data to make determinations about water quality, fishing, and lake protection.

Measuring the Circumference of Earth - with GPS! **Grades: 9 - 12**
Session: 3
Presenter: Kelly Welch, Greely High School
After a brief introduction to GPS technology and the Garmin GPS72 participants will head outside (rain or shine) to do an inquiry-based lab activity that uses satellite data to estimate the earth's circumference.
The session will end with a discussion of precision, accuracy, and error analysis.

Cool Free Science Tools and Activities **Grades: K - 12**
Session: 3
Presenter: Elizabeth Sky-McIlvain, Least Tern
This workshop for elementary and middle school teachers will present an alignment of core Maine Leaning Results for Science and Technology with interactive, collaborative tools and resources that are freely available on the Internet and adaptable to your curriculum. We will sample some of the short-term activities and review the best of the long-term projects and collaborations.

Using Real Time Data on the Internet to Address Concerns in Secondary School Science **Grades: 9 - 12**
Session: 3
Presenter: Jonah Rosenfield, Waynflete School
The conflict between teaching 'content' and 'process' in our nation's secondary school science classrooms is becoming more tense than ever in today's emerging culture of high stakes standardized exams which are, ever increasingly, being linked to graduation requirements. I propose that using real-time data from Ocean Observing Systems (OOS) like GoMOOS (Gulf of Maine Ocean Observing System) addresses stakeholders' interests, thus being a valuable tool in both classroom planning and school-wide curricula programming.

Astronomical Data Analysis Using ds9 **Grades: 9 - 12**
Session: 4
Presenters: Pamela Perry, Gary Glick & Donna Young, Chandra X-ray Center
An introduction to software (available as a free download) that allows students to perform X-ray astronomy data analysis on data sets form the Chandra X-ray Observatory using methods similar to those of actual astronomers.

QUEST: Science You Can Use **Grades: K - 8**
Session: 4
Presenter: Barbara Noyes-Pulling, Maine PBS
QUEST is more than a popular public television series. Because of its local content, it is a great resource for teachers. Each year, 12 or more lesson plans for middle and high school teacher are created. Even more important, it can be used to show students the many scientific fields to study in Maine, as well as scientific career opportunities.

Assessment Reliability - Consistency and Accuracy **Grades: K - 12**
Session: 4
Presenter: Jill Rosenblum, MMSA
How important is assessment reliability? This session will review the importance of assessment reliability and focus on developing consistent and accurate scoring for science assessments.

Meet Ribit: an Online Inquiry Tool for Science **Grades: K - 12**
Session: 4
Presenter: Elizabeth Sky-McIlvain, Least Tern
This workshop will focus entirely on one free web-based tool: ribit, from TIElabs. Participants will learn how to make maximum use of the tool in any computer use setting (even for homework), leaving with an activity storyboarded. Participants with Internet connected computers can register and begin to create an activity. You will learn how to locate or share photo and print resources (charts, graphs, data tables) will be an important element of the workshop.

MAINE SCIENCE TEACHERS ASSOCIATION

Maine Science Teachers Association (MSTA)

2004 Annual Conference

"Science: Nothing Connects Learning Better"

Gardiner Area High School

October 8, 2004

Registration/Membership Form

Please complete the information below.
Please note: Purchase orders are a tremendous burden for your *volunteer* registrar.
Group registrations **MUST** include an individual form completed by each participant.

Name _____ Position_____
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State _____ Zip _____
School or organization _____
Addresss_____
County _____
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Telephone (home) _____ Work _____
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Fax # _____

Preferred mailing address (for newsletter, etc) [ ] home [ ] organization

Level: [ ]K-2 [ ]3-4 [ ] 5-8 [ ] high school [ ] college [ ] pre-service

Please check strands of interest:

[ ] Science and Literacy
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[ ] Ocean Science
[ ] Environmental Science
[ ] Technology
[ ] Assessment
[ ] Standards Based Kits
[ ] Inquiry
[ ] Science Labs of the Future
[ ] NASA and Earth/Space Science
[} Professional Development
[ ] Other _____

Advance Registration Conference Fee is $50.00. On site registration is $60.00.
The conference fee, includes lunch and membership in MSTA.
Pre-service teachers can register for the conference and receive membership for $25.00.

Please indicate membership choice: [ ] MSTA (science) $50 ___ renewal ____new
[ ] Preservice $25.00

All registrants should preregister.
A confirmation card will be sent to all registrants whose registrations are received by September 15, 2004.

If you are unable to attend the conference but would like to **renew** your membership or **join** the organization, please send $15 to the address below.

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