Final Report for Period: 09/2009 - 02/2010
Submitted on: 03/22/2010
Principal Investigator: Crystal, Lester M.
Award ID: 0610333
Organization: MLP
Submitted By:
Crystal, Lester - Principal Investigator
Title:
The NewsHour with Jim Lehrer Science Unit

Project Participants

Senior Personnel

Name: Crystal, Lester
Worked for more than 160 Hours: Yes
Contribution to Project:

Name: Winslow, Linda
Worked for more than 160 Hours: Yes
Contribution to Project:
Executive Producer responsible for all facets of production.

Name: Jaffe, Karen
Worked for more than 160 Hours: Yes
Contribution to Project:
Education Advisor responsible for advising on all aspects of the education outreach activities.

Name: Parson, Patti
Worked for more than 160 Hours: Yes
Contribution to Project:
Managing Producer responsible for giving editorial guidance for the production team and acting as liaison with the advisors, the external evaluators and the beat.

Name: Kennedy, Franmarie
Worked for more than 160 Hours: Yes
Contribution to Project:
Education Outreach Coordinator responsible for coordinating all education outreach activities.

Name: Banville, Lee
Worked for more than 160 Hours: Yes
Contribution to Project:
Web Editor, creates ancillary material for online site.

Name: Abracciamento, Roxanne
Worked for more than 160 Hours: Yes
Contribution to Project:
Production controller, handles all financial matters.

Name: Butler, Debra
Worked for more than 160 Hours: Yes
Contribution to Project:
Tape librarian, handles all duplication requests for advisors and NSF.

Name: Bearden, Tom
Worked for more than 160 Hours: Yes
Contribution to Project:

On-air correspondent, works on specific segments.

Name: Bowser, Betty Ann
Worked for more than 160 Hours: Yes
Contribution to Project:
On-air correspondent, works on specific segments.

Name: Epatko, Larisa
Worked for more than 160 Hours: Yes
Contribution to Project:
Web editor, creates ancillary material for online site.

Name: Mulik, Katie
Worked for more than 160 Hours: Yes
Contribution to Project:
Associate Producer, does research, conducts preinterviews, sets up location shoots and produces segments.

Name: Wasey, Adnaan
Worked for more than 160 Hours: Yes
Contribution to Project:
Web editor, responsible for education outreach activities, including presentations at workshops and conferences.

Name: Winerman, Lea
Worked for more than 160 Hours: Yes
Contribution to Project:
Associate web editor, responsible for education outreach involving museums and education associations.

Name: Michels, Spencer
Worked for more than 160 Hours: Yes
Contribution to Project:
Senior correspondent and on air journalist.

Name: Jennings, Joanne
Worked for more than 160 Hours: Yes
Contribution to Project:
research science stories for the science reports.

Name: Rubin, Terry
Worked for more than 160 Hours: Yes
Contribution to Project:
Assistant producer for the science reports/

Name: Marder, Jenny
Worked for more than 160 Hours: Yes
Contribution to Project:
Online editor for the science reports

Post-doc

Graduate Student

Undergraduate Student

Technician, Programmer

Other Participant

Name: Bielefeldt, Angela
Worked for more than 160 Hours: Yes
Contribution to Project:
Advises the production on content and significance.

Name: George, Yolanda
Worked for more than 160 Hours: Yes
Contribution to Project:
Advises the production team on content, development and significance of subject.

Name: Kennedy, Don
Worked for more than 160 Hours: Yes
Contribution to Project:
Advises production team on content, topics and story lines.

Name: Miller, Kenneth
Worked for more than 160 Hours: Yes
Contribution to Project:
Advises production team on content, topics and story line

Name: Sass, Stephen
Worked for more than 160 Hours: Yes
Contribution to Project:
Advises production team on content, topics and story line.

Name: Smarr, Larry
Worked for more than 160 Hours: Yes
Contribution to Project:
Advises production team on content, topics and story line.

Name: Jacobson, Murrey
Worked for more than 160 Hours: No
Contribution to Project:

Research Experience for Undergraduates

Organizational Partners

Edumetrics

KQED Inc
We have collaborated with KQED on the NSF Funded science series Quest.

WNET.ORG
Rockefeller Fund on 'Blueprint America'

Other Collaborators or Contacts

We have collaborated with Quest, the NSF-funded science series originating out of KQED/SF and with PolarPalooza, the Carnegie Museum, the California Academy of Science, WNET/Rockefeller Fund on 'Blueprint America', Climate Central and ITN.

In addition to our science advisors (listed above), we frequently consult with scientists, researchers, educators and others with personal or

professional experience

This is a partial list (in alphabetical order)
Dr. David Acheson, Assistant Commissioner for Food Protection, FDA
Lucy Adams, resident of Kivalina, Alaska
Enok Adams, resident of Kivalina, Alaska
James Agee, emeritus professor, Forest resources, University of Washington
Buzz Aldrin, Astronaut
Chris Andrews, California Academy of Sciences
Randy Atkins, American Physical Society
Norm Augustine, US Space Flight Review Committee
Dr.James Baldini, paleoclimatologist, Durham University
Dr. Lisa Baldini, paleoclimatologist, Durham University
David Barrett, Olin College of Engineering
Alan Bean, Astronaut
Daniel Becker, Safe Climate Change
Rod Beckstrom, former director National Cyber Security Center
Sam Bethea, Entergy/Texas
Paul Bledsoe, National Commission on Energy Policy
Dr. Robert UC-San Francisco
Jason Bobe, DIY Biology
Greg Bonfiglio, Proteus Venture Partners
Doug Boyer, Levee Commissioner
Jeff and Barb Boyer, farmers
William Boyle, Nobel Prize Winner, Physics, 2009
Gina Brazao, student participant, Future Cities
Roger Brent, critic of DIY Biology
Eric Brown, FDA
David Butcher, Colorado Public Health Laboratory
Capt. Patrick Callahan, Massachusetts National Guard
David Cameron, Harvard Medical School
Andrew Chaikin, author
Leroy Chiao, Astronaut
Willy Chiu, IBM
Eric Chivian, Harvard University
Dr. Michael Clarke, Stanford School of Medicine
Albert Clay, Entergy/Texas
Thomas Cochran, NRDCl
Leslie Collins, National Engineers Week Foundation
Gordon Cook, Scottish Universities Environmental Research Centre
Mac Cowell, DIY Biology
Charles Cranfill, Los Alamos National Laboratory
Madelyn Creedon, DOE
Alicia Cronquist, Colorado Department of Public Health
Adam Culbert, teacher, Gates Intermediate School
Charles Dean, Qinetiq
Yvo De Boer, UNFCCC
Mariette DiChristina, Scientific American
Tom DeHaven, Flatiron-Mason
John Densberger, Lawrence Livermore National Laboratory
David Diss, Colorado State University
Joe Domino, Entergy/Texas
Sid Drell, Prof. emeritus, Stanford Linear Accelerator
Bob Drewes, California Academy of Sciences
Jack Duff, student participant, Future Cities
Ret. Admiral Joe Dye, irobots
Simon Dyer, Environmentalist

Charlie Eckberg, environmentalist
Michael g. Edwards, Venoco, Inc.
Judge Ed Emmett, Harris County Commissioners Court
Drew Endy, synthetic biologist
Brian Fisher, California Academy of Sciences
Steve Gaudet, Syncrude
Margot Gerritsen, Stanford University
Brig. Gen. Thomas Gioconda, DOE
Alexander Glass, UC-Berkeley
Peter Goldmark, Comm.of Public Lands, WA
Earl Gray, National Health and Environmental Effects Research Laboratory
Brian Green, Deputy Assist. Secy of Defense
Tom Grizzard, farmer
Terry Gupton, cattle rancher
Kevin Gutknect, Minnesota Department of Transportation
Craig Haggerty, Centerpoint Power
Ron Hall, TVA
John Hanley, Manager, Constellation Program, NASA
Will Happer, Princeton University
Andrew Hargadon, UC-Davis
Brian Hart, inventor
Larry Hartig, Alaska Department of Environmental Conservation
Becki Heath, U.S. Forest Service
Connie Hedegaard, UN Climate Change Conference
Stephen Hentges, American Chemistry Council
Ernie Higgins, CalEnergy
Michael Holland, Compound Media
Jeffrey Hollender,7th generation
Andy Horne, Imperial Valley County Commissioner
Rep. Duncan Hunter
Randy Jirtle, Duke University
Charles Kao, Nobel Prize winner, Physics, 2009
Dan Kammen, UC-Berkeley
Rebecca Kauffman, Southern Ute Alternative Energy
Heather Kendall-Miller, Native American Rights Fund
Christine Keys, FDA
Ray Kidder, physicist, nuclear weapons designer
Tom Knight, MIT
Steve Koonin,CalTech
Dr. Arnold Kriegstein, UC-San Francisco, Institute of Regeneration Medicine
Linda Krop, Environmental Defense Center
Matt Landon, United Mountain Defense
C. Owen Lovejoy, Kent State University
Kelli Ludlum, American Farm Bureau
Bruce Luyendyk, UC-Santa Barbara
Drew Malcomb, DOE
Tim Marquez, Venoco, Inc.
Michael May, former director of Lawrence Livermore National Laboratory
Katie Maple McBride, GM
Dr. Ross McEwing, Trade Wildlife Forensics Unit
Ruth McKernan, Pfizer
John McTague, UC-Santa Barbara
George Miller, Lawrence Livermore National Laboratory
Ed Moses, Lawrence Livermore National Laboratory
Richard Muller, UC-Berkeley
David Nahai, LA Power and Water
Mary Nichols, California Air Resources Board

Marianna Naum, FDA
Percy Nayokpuk, Shishmaref, Alaska
Rhetha Newbold, NIH
Colette Niazmand , Tesla Motors
Daniel Nocera, MIT
Rep. Jim Oberstar
Thomas Okarma, Geron Corporation
Trish Opheen, Alaska District, Army Corps of Engineers.
Racquel Palmese, Green Technolog.org
Christopher Paine, NRDC
Bob Park, American Physical Society
David Paulison, FEMA
Mary Peters, Secy of Transportation
Michael Pollan, 'In Defense of Food'
Carl Pope, Sierra Club
Susan Prichard, Forest Ecologist, University of Washington
Ellen Purdy, DOD
Bob Quinn, Qinetiq
John Reilly, MIT
Rob Renner, Canadian Environmental Minister
Randy Rettberg, MIT
Billy Reynolds, Entergy/Texas
Jesse Reynolds, Center for Genetics and Society
Mike Reynolds, Architect
Burton Richter, Stanford University
Steve Roberson, Qinetiq
Alan Roberts, National Wildlife Crime Unit, Kenya
Jay Rogers, CEO, Local Motors
Don Sadoway, MIT
April Sall, California Desert Coalition
Jennifer Sass, NRDC
Paul Schmerbach, Tennessee Department of Environment and Conservation
Christopher Thomas Scott, Stanford University
Rep. James Sensenbrenner, Jr.
Dr. Adam Scaife, Met Office, Hadley Center
Pam Schaller, California Academy of Sciences
Meredith Seife, Dept. of Health and Human Services
Bart Shepherd, California Academy of Sciences
Carol Shield, University of Minnesota
Pam Silver, Harvard Medical School
Col Robert Sinkler, Army Corps of Engineers
Rob Socolow, Princeton University
Heather Sohl, WWF/UK
Joe Sparano, Western States Petroleum Assn
Pierre Sprey, Defense consultant
Dr. Deepak Srivastava, Gladstone Institute of Cardiovascular Disease
Stephanie Stone, California Academy of Sciences
David Sykuta, Illinois Petroleum Council
Rep. Ellen Tauscher
Ross Tessien, Impulse Devices
Ross Tierney, Jupiter Direct, NASA
Dr.Alan Trouson, California Institute for Regenerative Medicine
Valerie Tucker, Gladstone Institute of Cardiovascular Disease
Rishi Tyagi, US Department of Interior
Bill Waddell, Army War College
Harlan Watson, House Committee on Science
Jim Wells, GAO

Gary Wessel, Brown University
Perry and John Weyiowanna, native hunters
Tim White, Univ of California, Berkeley
Bryan Willson, Colorado State University
Jean Wilson, Staff, Energy and Water Subcommittee
Xianmin Zeng, researcher buck institute

Activities and Findings

Research and Education Activities:

Over the past three years of the grant, we feel that we met the goals that we aimed to achieve:

1. To produce more programs with a focus on engineering and technology
2. Add more graphics to the science reports where applicable
3. Produce science reports that were news worthy
4. Focus on the major issues of the day such as energy and global warming
5. Establish successful partnerships with other NSF-funded groups including Quest, PolarPalooza, the Carnegie Museum and the California Academy of Science.
6. Build on each year's successful partnerships and engage more science museums, centers and entities in robust collaborations to extend the reach of the NewsHour science reports into the informal education arena.
7. Conduct an on-going evaluation process that will enable us to learn and adapt our outreach and program plans with the feedback received from our audiences and evaluation team.
8. Increase the outreach to the general public and to underserved minorities. `

Additionally, we have continued to conduct extensive research and background interviews with scientists. Our literature review includes reading the professional journals, periodicals, Internet postings and science for the general public like SEED magazine in addition to regularly consulting with our science advisors. Through these activities, we continue to capture the most valid research findings and to identify the scientists that are best able to explain their work to the public on camera. Furthermore, we have reviewed other science directed television programming and sought advice from our formal science advisors and our informal science museum and center directors on how best to introduce informal science subjects to the general public. Our Extra online science outreach team also expanded their science resources for teachers and students and at the same time, they have been invaluable with their suggestions from the field. The Science Outreach team conducted workshops, forums and other venues to share the Science Segment content with the general public, teachers, science teachers and science bloggers. To date, our outreach team has developed partnerships with 28 Science Museums and launched a monthly partnership with the Ballston Science and Technology Alliance to use our science reports to introduce their monthly Science Caf?s.

SCIENCE SEGMENTS
*Invasive Carp Threaten Lake Michigan (7/3/06)
Tracing DNA (7/20/06)
RFID (8/17/06)
Classifying Pluto -setup tape & studio (8/16/06)
Gas Drilling in Pinedale WY (8/22/06)
Pluto Downsized ?setup & studio (8/24/06)
Bias against Women in Science ? setup & studio (9/19/06)
*Prosthetics: Advanced Step (9/19/06)
Mars Crater ? studio (9/29/06)
Father & Son Nobel Prize ? setup & studio (10/4/06)
NextFest Technology (10/27/06)
Hubble Decision ? setup & studio (10/31/06)
Science Desk: Global Warming & Fish ? studio (11/3/06)
World Trade Center Dust (11/21/06)
Spinach and e-Coli (11/22/06)
Man on the Moon? ? studio (12/5/06)
Water on Mars? ? studio (12/7/06)

Science Year End Wrap Up (12/29/06)
Stem Cells & Amniotic Fluid ? setup & studio (1/7/07)
Boeing Dreamliner (1/9/07)
Debating Pluto (1/31/07)
Stonehenge - setup & studio (1/31/07)
UN Global Warming Study ? studio (2/2/07)
Brain on Music (2/5/07)
Irradiated Food (2/8/07)
El Salvador?Tracing Kids' DNA (2/15/07)
*e-Waste in India (2/19/07)
Dogs and Cancer (3/15/07)
Secrets of the Ocean Deep ?studio (3/16/07)
*Missing Bees (4/3/07)
Climate Change: Eileen Claussen ? studio (4/10/07)
Climate Change: Daniel Rosenblum ? studio (4/11/07)
*Cellphones & GPS (4/11/07)
Climate Change: Bjorn Lomburg ? studio (4/25/07)
Einstein Biography (4/26/07)
Climate Change: Coal ? studio (5/1/07)
Steven Chu Profile (5/2/07)
Intel Chips (5/8/07)
FAA Aging Pilots (5/8/07)
Engineers & Oakland Freeway Collapse (5/10/07)
Climate Change: Marty Hoffert - studio (5/10/07)
*Uncovering Jamestown (5/14/07)
Alaska Students & NASA THEMIS Project (5/16/07)
NASA Moon/Mars Mission (5/31/07)
Food Safety (6/1/07)
Mimicking Embryonic Stem Cells ? studio (6/7/07)
Oregon Climatologist (6/21/07)
Baseball Physics (7/12/07)
Deep Ocean (7/16/07)
*Viking Treasure Unearthed (7/19/07)
Disappearing Birds (7/31/07)
Greenland (8/1/07)
Teacher into Space (8/7/07)
Engineering Bridges (8/13/07)
Digitizing Traditional Knowledge (8/13/07)
Earthquake Proofing Schools (8/23/07)
DNA/Craig Venter Interview -studio (9/4/07)
*Race for Arctic Gas (9/10/07)
*Arctic Seed Bank (9/13/07)
Sputnik Anniversary - studio (10/3/07)
Nobel Prize: Gene Modification - studio (10/8/07)
California & Stem Cells (10/08/07)
Ethanol Boom (10/9/07)
Solar Decathlon (10/23/07)
BPA- Plastic Bottles (10/30/07)
New Planet (11/7/07)
Cloning Monkey Embryos -studio (11/15/07)
Call to Action: UN Climate Change ? studio (11/19/07)
Smartphones (11/20/07)
Stem Cell Debate w/Ken Miller (studio) (11/20/07)
One Laptop per Child ? studio (11/22/07)
Concussions & High School Students (11/26/07)
Engineers without Borders (12/7/07)
Alaska: Aircraft & New GPS (12/12/07)

Spotted Owl (12/18/07)
Minnesota Bridge Collapse and Engineering Answers ? studio (1/15/08)
Satellite Shot Down -studio (1/20/08)
Bluray vs DVD ? studio (2/19/08)
Dinosaur Display (2/21/07)
Carbon Offsets (3/6/08)
Pharmaceuticals in the Water ?studio (3/10/08)
*Toxic Trailers Part I (3/13/08)
*Toxic Trailers Part 2 (3/14/08)
*Toilet to Tap (3/24/08)
Disintegrating Ice Shelf ? studio (3/26/08)
*Bangladesh Climate Change (3/28/08)
Geroscience (3/31/08)
High Tech High (4/17/08)
Pittsburgh Robototics (4/23/08)
Genetic Discrimination -studio (4/25/08)
Green Tech from Rust Belt (5/12/08)
Polar Bears- studio (5/14/08)
Ethanol Winners & Losers (5/15/08)
BPA Update (5/20/08)
Supernova (5/21/08)
Mars Phoenix Lander(5/26/08)
Cloned Beef (5/27/08)
Climate Change ? studio (5/28/08)
China's Polluted Skies (5/28/08)
Green Technology (5/29/08)
Monkey Brains - studio (5/29/08)
Ice on Mars - studio (6/20/08)
Iowa Floods ? Levees (6/20/08)
Iowa Floods ? Geography (6/23/08)
Electric Cars (6/25/08)
Earliest Americans (6/30/08)
Alaska's Sinking Villages (7/10/08)
CA Academy of Sciences (7/31/08)
Couch Potato Pill - studio (8/1/08)
Gorilla Discovery ?studio (8/5/08)
*Bottled Water Battle (8/18/08)
*High Tech High (8/20/08)
Particle Collider ? studio (9/10/08)
Tracking a Salmonella Outbreak (9/10/08)
Minneapolis Bridge Re-opens (9/17/08)
Restoring a Power Grid (9/19/09)
*Stormwater Runoff (10/8/08)
*Penn. Aging Bridges: Blueprint Nation (10/20/08)
*Port in Trouble: Blueprint Nation (10/21/08)
*Urban Sprawl: Blueprint America (10/22/08)
*Decaying Airports: Blueprint Nation (10/23/08)
*Boston's Big Dig: Blueprint Nation (10/24/08)
*Trout and Drought(10/31/08)
*India: Cars (11/11/08)
*Dementia Research(11/12/08)
Plastic Seas (11/13/08)
*India: Coke vs Water (11/17/08)
Polar Bears ? studio (11/25/08)
Obama Unveils Enviro/Energy Policy Teams ? studio (12/15/08)
DIY Biology (12/29/08)
CA Offshore Drilling (1/1/09)

Ethanol Debate (1/28/09)
CA Stem Cells Update (1/29/09)
TN Coal Ash Spill (2/2/09)
Digital Delay ? studio (2/4/09)
Darwin's Impact ? studio (2/13/09)
CA Utilities & Renewables (2/17/09)
Obama Removes Stem Cell Funding Restrictions ? studio (3/9/09)
*SF Transit Problems: Blueprint Nation (3/9/09)
*DC Transit Problems: Blueprint Nation (3/10/09)
Fusion Energy? (3/17/09)
New Emissions Regulations - studio (3/17/09)
Future Cites: Middle School Engineers (4/22/09)
Rail Choke Point: Blueprint Nation (4/22/09)
Military Robots (4/23/09)
Help for Hubble (5/11/09)
Brian Hart: Designing a Robot (5/14/09)
Emissions for Cars (5/19/09)
Cyber Czar ? studio (5/29/09)
Stalagmites & Rainfall (6/2/09)
Renewable Grid (6/9/09)
Moon & Beyond (6/19/09)
*Carbon Clock (6/30/09)
Cyber Attacks (7/8/09)
Cloud Computing (7/9/09)
Moon Landing Anniversary (7/20/09)
*Forensic Clues to Poaching (8/6/09)
*'Zombie' Highways? Blueprint Nation (8/11/09)
NASA Technology & Budget Woes ?studio (8/14/09)
*Climate Change & Wildfires (9/2/09)
Phone Aps (9/3/09)
Designing a New Car: Local Motors (9/8/09)
Climate Change: Yvo de Boer (9/18/09)
Solar Storage (9/22/09)
Unearthed Gold Brings Clues to the Past (9/25/09)
Bay Bridge Battles (9/29/09)
Earthships ? Recycled Homes (9/30/09)
Fossils & Evolutionary Steps studio (10/1/09)
Nobel Prize: Physics ? studio (10/6/09)
Food Tracking (10/8/09)
Crashing into the Moon - studio (10/9/09)
*Ice Unlocks Greenlands Climate History (10/19/09)
Bio-Fuels: Algae (10/30/09)
Climate Change in Congress (11/3/09)
Canadian Oil (11/16/09)
Diplomats Seek Pact on Emissions 12/7/09
Himalayas' Alarming Glacial Melting 12/15/09
Congress Hurdle for Climate Change 12/18/09
DNA Evidence Exonerates Prisoner - studio (12/18/09)
*Eric Chivian: Climate Change & Biodiversity (12/18/09)
Cyber Security - studio (12/22/09)
(* indicates we used non-NSF funds for these segments)

ONLINE EXCLUSIVES FOR NSF GRANT

Space Shuttle Touches Down (7/17/06)
Map: Fuel Economy Chart (8/7/06)

Interactive: Vehicle Emissions (8/7/06)
Scientists Demote Pluto (8/24/06)
Atlantis Docks (9/11/06)
Interactive: Track 200,000 Years of Migration (9/14/06)
Arctic Ice Melting Faster (9/14/06)
Forum: African Ancestry and DNA (9/14/06)
Graphic: How DNA Kits Work (9/14/06)
Science of DNA Kits (9/14/06)
*Invisibility Cloak (10/19/06)
Global Warming Effect on Economy 10/30/06
Scientists Sequence Neanderthal Genome 11/17/06
Pluto Debate Eclipsing Research? 11/30/06
Timeline: Pluto in the News 11/30/06
Pop Culture Tries to Save Pluto 11/30/06
Permanent Moon Base by 2024 12/5/06
Orbiter Shows Water 12/6/06
Comet Particles Glimpse of System's Origin 12/14/06
Cloned meat declared safe: 12/28/06
House Votes to Expand Stem Cell Research 1/11/07
NASA Rovers Test Software 1/19/07
Report Blames Humans for Global Warming 2/2/07
New Emissions-Cutting Bills Proposed 2/16/07
Slideshow: Images from Mars 2/20/07
Interactive: Mars Rovers' Tools 2/20/07
Polar Bears Possibly Listed as Endangered 2/23/07
Changes at Poles Drive Global Warming 2/23/07
Profiles in Science: Liz Miller 2/23/07
Profiles in Science: Christina Millan 2/23/07
Profiles in Science: Matthew Druckenmiller 2/23/07
Slideshow: Dry Valley Organisms 2/23/07
Polar Years Examines How Systems Interact 2/23/07
International Agreements & Antarctica 2/23/07
Ocean Reveals 6 Million New Genes 3/14/07
Possible Seas on Saturn's Moons 3/14/07
Dinosaurs Extinction No Impact on Mammals 3/29/07
Thermal Inversions 4/24/07
UN Panel & Climate Change 5/4/07
New Marine Species 5/17/07
Cape Wind Update 5/24/07
Nanotechnology & Hybrids 5/31/07
Landmark Study DNA 6/14/07
Shuttle Undocks from Space Station 6/19/07
Polar Research Helps Mars Research 6/22/07
Slideshow: Bioluminescence in Deep Ocean 7/16/07
Forum: Kathryn Sullivan 8/13/07
Forum with Stephen Chu on Bio-fuels 8/23/07
DNA of Single Person Mapped 9/4/07
Update: Disappearing Bees 9/6/07
Slideshow: Mars Explorer 9/13/07
Forum: Dr. Irving Weissman 10/8/07
Physics Nobel Prize 10/9/07
Corn vs Cattle 10/9/07
Venture Capitalists & Alternative Energy 10/9/07
Discovery Launch 10/23/07
Forum: BPA 10/30/07
Extended Interviews: Google 11/20/07
Forum: Concussions 11/26/07

Climate Change Summit 11/30/07
Slideshow: Black Hole 12/18/07
Polar Bear Decision? 12/19/07
Polar Bear Decision Delayed 1/9/08
Alternative Fuels 1/10/08
Switchgrass 1/11/08
Scientists Grow Rats from Transplanted Cells 1/14/08
Paralyzed Mice Regain Movement 1/17/08
Computer Face Recognition 1/25/08
Scientists Push for Science-Based election debate: 2/1/08
Slideshow: Arctic Buoys Monitor Climate
Slideshow: Underwater Robots: 2/6/08
Slideshow: Icebreakers/Slide Show: 2/6/08
Flesh Eating Dinos: 2/14/08
Evolution in Schools: 2/22/08
Slide Show Arctic Seed Vault Opens: 2/26/08
Corn Genome: 2/29/08
NASA Orbiter: Mars: 3/4/08
Disappearing Bats: 3/7/08
Hobbits or Humans: 3/14/08
Smog-Chemical Connection: 3/21/08
New Wireless Data Lines: 3/28/08
Tracing Arctic Pollution w/slideshow: 4/1/08
Biodiversity in Madagascar: 4/11/08
Colliding Galaxies: Slideshow: 4/24/08
Social Status Hard Wired in Brain: 4/25/08
Pine Beetles (online EXTRA!): 4/28/08
Salvia Divinorum: 5/6/08
Platypus Genome: 5/7/08
China Earthquake: 5/12/08
Yucca Mountain: 5/16/08
Extended Interview: Khosla - 6/2/08
Extended Interview: electric cars 6/3/08
Climate Bill Tabled: 6/6/08
Tornado Records: 6/6/08
Toxic Dumping: 6/19/08
Ice on Mars: 6/20/08
Transparent Fish: 6/25/08
Cocoa Genome: 6/26/08
Plants Moving Away from Heat: 6/27/08
HIV Mortality Rates: 7/2/08
G-8 on Climate Change: 7/8/08
Water on the Moon: 7/10/08
Stem Cell Investors: 7/18/08
Fuel Efficient Cars: 7/23/08
Northern Lights (new discoveries): 7/25/08
NASA 50th: 7/29/08
Saturn's Moon: 7/31/08
Stem Cells/ALS: 8/1/08
Gorilla Mother Lode: 8/5/08
Anthrax Case Update: 8/6/08
Particle Accelerator: 8/8/08
Stone Age Graveyard Uncovered: 8/14/08
Dead Zone Spreads: 8/15/08
Mapping Arctic boundaries: 8/20/08
Rebuilding Levees Forum: 9/1/08
Adult Stem Cells/Insulin: 9/2/08

Arctic Sea Levels: 9/4/08
Map of Cancer: 9/5/08
Salmonella: 9/10/08
Supercollider: 9/10/08
Forecasting Hurricanes: 9/12/08
BPA and the FDA: 9/19/08
Google Phone: 9/23/08
Particle Collider on Hold: 9/26/08
Snow on Mars: 9/30/08
Nobel Prize in Chemistry: 10/08/08
Fight against TB 10/17/08
India Moon Mission (Online) 10/22/08
Hot Drinks Warm Feelings 10/24/08
Global Warming, Montana Trout 10/31/08
Universal Flu Vaccine 10/31
Report: Cancer Patient Genome Mapped 11/7/08
Report: Phoenix Mission Ends 11/11/08
Dementia Research 11/12/08
Interactive Quiz: Recycling Knowledge 11/13/08
Slide Show: Plastic Pollution 11/13/08
Forum: Plastic Pollution in the Ocean 11/13/08
Slide Show: Astronomers Snap Distant Planets 11/14/08
Astronomers and Planets 11/14/08
Researchers Decode DNA Wooly Mammoth 11/20/08
Search for Invisibility Cloak 11/21/08
Oldest Turtle Fossil Found 11/27/08
Rocks on Mars 12/5/08
Carol Browner New Climate Chief 12/15/08
First Face Transplant 12/18/08
Pine Beetle Destruction 12/19/09
Role of WH Science Advisor 12/26/08
Forum: Building Biological Machines 12/31/08
SlideShow: Biology Competition 12/31/08
Great Barrier Reef Worries with Slow Growth 1/2/09
Bush to Establish World's Largest Marine Sanctuary 1/6/09
Nanoscale Levitation 1/9/09
Chu Confirmation Vows 1/13/09
Study Shows Warming Trend in Antarctica 1/22/09
Environmental Groups Weigh Impact of Obama 'Midnight Rules' Freeze 1/23/09
Obama Moves to Revise Fuel Efficiency Policies 1/26/09
Forum: The Digital TV Conversion 1/26/09
Wind Farms Expand 1/30/09
Iran Launches Satellite 2/3/09
Possibility of Satellite Collisions? 2/12/09
Darwin's Legacy 2/12/09
Love as Chemical Reaction 2/13/09
Blog: Dance Dance Science Revolution 2/18/09
Slideshow:NASA Launches Orbiting Carbon Observatory 2/20/09
CO2-tracking Satellite Crashes after Failing to Reach Orbit 2/24/09
Slideshow: 'Design for the Other 90 Percent,' 2/27/09
Reversing Bush Rule, Obama Resumes Safeguards for Endangered Species 3/3/09
In Paper Folding, Art and Science Align 3/4/09
Slideshow: Origami Artist, Scientist Discusses His Work 3/4/09
NASA Telescope to Search for Earth-like Planets 3/6/09
Obama Lifts Restrictions on Stem Cell Funding 3/9/09
Text Messages Are New Tool for AIDS Education in South Africa 3/9/09
Emissions Trading ins and outs 3/17/09

What is Global Warming? 3/17/09
Cities, Towns Work to Combat Climate Change 3/23/09
Joint Project Seeks to Stem Impact of Energy Production on WY Wildlife 3/27/09
States Move to restrict Stem Cell research after Obama lifts restrictions 4/3/09
As Polar Year Ends, Researchers Look for Climate Clues in Mountains of Data 4/10/09
Slideshow: Researchers Examine Arctic Climate Chemistry 4/10/09
EPA Report Marks First Step Toward Climate Change Regulations 4/17/09
Writing About Values Boosts Grades, Shrinks Achievement Gap 4/17/09
'Clean Coal' Debate Plays Out on the Airwaves 4/21/09
Slideshow: College Students Exhibit Sustainable Designs on National Mall 4/22/09
Slideshow: Military Robot Exhibition 4/23/09
Forum: Military Robots 4/23/09
Climate Studies Suggest Need for Drastic Cut in Fossil Fuels 4/29/09
Slideshow: Two Decades of Hubble Repairs 5/11/09
Researchers Mine Cell Phone Data for Insight Into Human Behavior 5/15/09
Slideshow: Cell Phone Data Gives Picture of Human Movement 5/15/09
Astronauts Complete Final Spacewalk of Hubble Repair Mission 5/18/09
Obama Unveils Tougher Emissions Standards Plan 5/19/09
Five Years Later, Mars Rovers Continue to Make Discoveries 5/21/09
Slideshow: Astronauts Complete Repairs in Final Hubble Servicing Mission 5/22/09
Obama Pledges Increased Cybersecurity, Will Name Cyber Czar 5/29/09
China Appears to Tighten Internet Access Around Tiananmen Anniversary 6/1/09
US Nuclear Sites Listed on Web 6/2/09
Blog: In Science and Jazz, Father and Son Find Common Bonds 6/9/09
Slideshow: Slide Show NASA's Latest Lunar Mission 6/18/09
Forum: Cap and Trade Debate 7/8/09
Forum: Cyber Attacks on Governments 7/16/09
Blog: Man and the Moon, 40 Years On 7/20/09
Space Exploration Goes Under Review 8/14/09
Slideshow: Tiny: Art From Microscopes 8/19/09
Blog: Tiny World, Big Art 8/19/09
Update: Security for Cloud Computing 9/28/09
Update: 'Masters of Light' Receive Nobel in Physics 10/6/09
Update: New Saturn Ring Could Hold a Billion Earths 10/7/09
Small Crash on Moon Could Have Big Scientific Impact 10/9/09
Update: Solar Decathlon 10/15/09
Slideshow: Preserving Antarctic Explorer's Hut 12/2/09
Update: Global CO-2 Monitoring in Mauna Loa 12/22/09
Forum: Scientists Name Breakthroughs of 2009 12/31/09

Findings:

Over the years, we combined the feedback from our viewers, our evaluators' studies, our formal and informal science advisors and our education outreach team's interviews and conversations held at conferences and other public sessions. Together the feedback has uncovered the following findings:

1. Viewers, teachers and general public are more likely to use our science reports as learning tools if the science reports are edited to a 3 to 6 minute version. This length is much easier to work into the classroom material, science museum public session or an after school program.
2. Viewers are surprised and interested to learn that we have regular science segments and are much more likely to watch the program after we send them e-alerts indicating that the science report will air. While they are very interested in receiving the e-alerts, their preference is to have a regular committed time for science reports.
3. Scientists and other professionals are also interested in learning about our science reports and through our science museums and centers network we have been given suggestions on other stories or topics to be covered. Our science reports are covered by science bloggers who also give us advice on topics for future stories.

4. Science Museums and Centers request a variety of science reports in various lengths as they view the reports as a great resource that they can adapt to their specific center's needs. Whether it's for a teacher training session, a public session, a kiosk or a student science class, the NewsHour Science Reports are the perfect visual to introduce a topic. Currently our science archive holds 170 titles on a diverse number of topics.

5. Education continues to be a major component of the program's science coverage. Our Web site's NewsHour Extra has enjoyed an eight-year track record of attracting younger people to the NewsHour brand with original reports written at a 10th grade reading level; lesson plans and teacher tools for STEM content; and student-generated material. In the 2008-2009 school year, NewsHour Extra science content had 92,987 unique users view 122,132 pages, according to Google Analytics. Some 78,321 educators used the lesson plans, and 17,644 students used the stories written for the young audience. The website address is: http://www.pbs.org/newshour/extra/teachers/science/)

Overall our viewers responded very favorably to our upgraded website because its features were easier to navigate and they found it easier to locate a specific story of interest.

Lessons learned:

1. Strategic partnerships enhanced our ability to reach more audiences and a diverse population via our network of science museum and centers. By collaborating with them on public sessions, exhibits and special science programs we have extended our reach into a diverse set of audiences. Through the network of museums and centers we are targeting under-served populations using their outreach and relationships.
2. By making our archive of science reports available to our science partners in a variety of formats and lengths we are able to appeal to many more teachers and science centers who have requested shorter versions of the original report to fit their curriculum.
3. Featuring science reports, slide shows etc on the website on a regular basis has helped us to build audiences by appealing to those people who are visiting our website seeking science reports.
4. Through our PBS affiliates?PBS stations that have relationships with their local science centers--we were able to create more science programming around a project being funded by CPB as was the case in the St. Louis Spotlights Cities.' We hosted a science event at the Danforth Plant Science Center and the event was broadcast on their local PBS station. Additionally, St. Louis PBS was able to assist us in recruiting local high school science students and teachers and provided us with a venue to host a focus group featuring several of our science reports. The results are included in the attached evaluation.
5. Using the feedback from our viewers, focus groups, advisors and survey results, we were able to create more synergy between broadcast and online, with forums, slide shows, and on air mentions of the online content. This content has greatly enhanced our online content.
6. We have learned what works for building an audience for serious science news and what doesn't. For example, Facebook was not a success for us. But Twitter was perfect for news and science enthusiasts.

7. Over the past three years, we focused on topics of critical interest to the country?ie energy, infrastructure, climate change. Additionally, we used topics of interest and covered them from a variety of angles.

Training and Development:

Our education outreach staff has been trained to conduct focus groups, presentations, workshops, etc., on how to use the Science DVDs as learning tools and how to teach an audience how to use them in their informal or formal learning settings. Each of the team is versed on the importance of using broadcast quality science reporting as a means to engage the audience and inform the audience on current events in science. The purpose of our education outreach is to help all citizens become more engaged in science topics of importance and give them the information to assist them in taking action. Additionally, our Online Extra staff continues to work with science teachers and students instructing them on how to use the science reports both broadcast and online in a formal education setting. Our outreach efforts are aimed at both the informal and formal science learning audiences. The science reports are at the juncture of informal and formal science education.

Outreach Activities:

During the previous year we significantly expanded our informal advisory group of science museums and centers from around the country, Canada and New Zealand. Feedback from this group of 28 institutions has informed our outreach plans.
By expanding our existing museum network, we broadened the numbers of viewers interested in our broadcast and online science reports in general as well as on reports about specific topics of interest, and to increase the use of our science content in informal education settings.

As outlined in our research findings, here is a snapshot of our activities:

- Conduct workshops and sessions at conferences.
- Host public science events with Ballston Alliance for Science and Technology
- Attend conferences and exhibit at the following:
- AAAS Annual Meeting
- National Science Teachers Association
- National Educational Computing Conference
- Association of Science and Technology Centers
- National Historically Black Colleges and Universities
- Develop Partnerships with State Science Museums and expanded the core group of 5 partnerships to 28 partnerships
- Outreach to Teachers via the conferences and through our Online Extra where we feature lesson plans based on the NewsHour Science Programs;
- General Public outreach includes our work with Films Media Group and our work with the American Library Association where we will present at their annual meeting.
- To communicate with underserved populations we are reaching out via the conferences, work with the AAAS and the Museums.
- Outreach via Websites: we are collaborating with the National Science Digital Library to share our content and we are also linking with WGBH PBS teacher resources to do the same.

Advisor feedback

Our advisors suggested we feature the science reports on a regular basis perhaps on the website if not on the broadcast. This would assist us in building the viewer audience as a regularly scheduled program is easier to remember to watch, like Science Fridays on NPR and Science Tuesdays in the New York Times. Our advisors were very complimentary of the science reports' content and treatment and they thought the increased number of infrastructure and engineering stories were important to engage more of the general public into the importance of science because the stories relate to topics in their everyday life.
In fact, the engineers among our advisors suggested we change the name of our website to Science and Engineering to better reflect what topics we cover. One advisor even suggested we try meta-data tagging the reports to be able to get more hits from those interested in engineering stories.

As for story ideas...one advisor suggested that we look more at the rapid evolution of the technology surrounding induced pluripotent stem cells, and the ethical and safety concerns that it raises. Two of our advisors wanted us to produce more reports on climate change, in particular the new information about the melting of major ice caps; the problems posed by black carbon; the growing need to find solutions for solar storage. We have incorporated almost all of the suggestions and are planning to have a regular science presence online as soon as we secure funding.

Finally, the advisors all agreed that the use of Twitter and YouTube featuring the PBS NewsHour Science Reports was pivotal in gaining the younger viewers. They suggested that we distinguish the science reports from the rest of the broadcast by using unique graphics.

The majority of the meeting was dedicated to assisting us in preparing for the next year's science reporting and considerable advice was given on how to keep the momentum going while we are seeking sustainable funding for the Science Reports.

Journal Publications

Books or Other One-time Publications

Web/Internet Site

URL(s):
HTTP//www.pbs/newshour/science
Description:
NewsHour has redesigned the science program website adding all the online science lesson plans and other links to correspond with the programs. Please see the list of 171 online exclusive reports under project activities.

Other Specific Products

Product Type:

Audio or video products

Product Description:

The Science Segment is now featured as a DVD series that is easily searchable by topic: animals and insects; space exploration; evnironmental science; biology and technology. Each DVD features the best of our segments.

Sharing Information:

We have been distributing these DVDs at conferences, workshops, Museums, and Libraries. Further, we are using them as a gift offering for individuals who will take our survey evaluating our program and our eduction outreach activities. This is in an effort to identify the best way to attract viewers to our science program.

Product Type:

Audio or video products

Product Description:

Please see list of the 182 tapes and studio discussions we produced, that is attached under Project Activities.

Sharing Information:

broadcast television

Contributions

Contributions within Discipline:

Our Science Team continues to endeavor to make science a part of the general public's news. Our viewers' feedback tells us that we are making a significant contribution in the areas of the environment/global warming, space/astronomy, biology and technology. Our coverage has made science topics part of everyday conversation. Further, it stimulates more research and possibly debate. By showing the new frontiers in science through the lens of the scientists, the general public can experience the excitement of discovery. As in the past years, we have continued to have scientists and the general public as well as journalists email or call us with positive feedback on our science programs.

In addition, our new education outreach activities have added a feedback mechanism for our Science Unit team to utilize. We are better able to find out from the general public including teachers which programs work best, which are the 'stickiest' in terms of keeping the audience's attention and which have spurred the viewer to engage in more research about the subject. We have found that:
1. programs with the human element are more engaging;
2. programs featuring more graphics (visuals) are better understood
3. programs that have b-roll in the labs or in the field are better understood
4. scientists telling the story have more credibility than just journalists telling the science story.
5. programs featuring interviews with young scientists are much more engaging for the younger audiences we are attracting.

Contributions to Other Disciplines:

Over the past six years, our outreach team has been able to create a 'model' for other broadcast programs produced by the NewsHour?a model for successfully expanding the exposure of the NewsHour within groups that are not regular NewsHour viewers. By successfully building our outreach plan around a core group of strategic partnerships, our science outreach has built a network of science centers and museums that are now collaborating with us on ways to expand our reach into underserved populations. We now have a network of 28 science centers and museums and one Science Caf? where our science reports are featured monthly as the introduction to their panel discussions. This outreach model is also being used by the NewsHour Global Health Report team as a means to build our audience and network in the global health arena.

Other lessons learned are:
1. Asking our science partners to serve in on an informal advisory board giving each partner more ownership of the project.
2. Keeping the network partners informed of upcoming science programs; special NewsHour events like Spotlight Cities and interviews happening in their region allows the science centers to give us invaluable feedback on the science reports and allows them to assist us in promoting our science reports within their audiences.
3. Featuring our science reports in science centers expands our reach into their audiences.
4. Featuring the Science Reports on YouTube draws a younger audience to our website and potentially to the broadcast.
5. Linking with our science partners via our website increased our online viewers.

Contributions to Human Resource Development:

We take very seriously the demands of science journalism and the need for absolute accuracy and clarity. Our producers have gotten increasingly sophisticated over the years, knowing always to make one more call to check facts and figures, to check interpretations. In the process, they have become sophisticated science journalists.

Our science unit team continues to train new production people as they are added to the team. Our feedback from viewers has given us an appreciation for how our science programs can inspire and educate. Our outreach with the AAAS is giving us the opportunity to expand our outreach to minority populations and our outreach with the 28 science centers and museums has broadened our training and development impact. We take seriously our commitment to attract new blood to the field, and so have tried to do programs ? like Future Cities with its middle school engineers, and DIY Biology with its IGEM competition. Our belief is that our programming influences young people to explore the science, engineering and technology career paths by exposing young adults to these professions through engaging profiles with real scientists. Additionally, we believe that our science reports featured on our online science page has increased our young student and post graduate audience.

Contributions to Resources for Research and Education:

When so much of television news programs these days is opinion, we strove to make our science pieces fact and data-based. While we have scientists who had different opinions, or regular citizens who questioned science, we continue to always include enough facts so that the viewer could make an informed decision. We think we set a model for how science can be covered seriously and informatively; with enough pacing and interesting characters to move the story forward, but without sacrificing content.

Contributions Beyond Science and Engineering:

Our education outreach and our evaluation process have given us a feedback mechanism for our team to receive viewers' impressions of and suggestions for our programs. For example, after one of our science reports on plastic trash in the ocean ran, several viewers wrote to say how impressed they were with the report and how it influenced them to take action. Several viewers wrote in support of our infrastructure stories. One email was from a civil engineer and a member of ASCE who was complementary of our report and was hopeful that our coverage will give the issue of our deteriorating infrastructure much needed public attention. Another viewer wrote in support of our City of the Future report about young students designing cities of the future. This viewer wrote: 'seeing kids doing projects to save the world and their own lives melted me into the floor?.'

In summary, our reports on infrastructure, technology and climate change continue to receive rave reviews from our viewers as well as from scientists. One viewer praised Dr. Heidi Cullen for 'another superb job of popular science reporting. Not an easy task. Now hopefully we will proceed with informed, sustained solutions. Keep up the great and important work!'

Conference Proceedings

Categories for which nothing is reported:

Any Journal

Any Book

Any Conference

Participant Individuals:
Senior Personnel: Linda Winslow; Karen Jaffe; Patti Parson; Franmarie Kennedy; Lee Banville; Roxanne Abracciamento; Murrey Jacobson, Debra Butler; Tom Bearden; Spencer Michels; Larisa Epatko; Joanne Elgart Jennings; Terry Rubin, Lea Winerman, Jenny Marder
Other (advisors): Angela Bielefeldt, Yolanda George, Don Kennedy, Kenneth Miller, Stephen Sass, Larry Smarr

Partner Organizations:

Other Collaborators
We have collaborated with Quest, the NSF-funded science series originating out of KQED/SF; as WNET/Rockefeller Fund on "Blueprint America"; Climate Central and ITN.

In addition to our science advisors (listed above), we frequently consult with scientists, researchers, educators and others with personal or professional experience

This is a partial list (in alphabetical order)
Dr. David Acheson, Assistant Commissioner for Food Protection, FDA
Lucy Adams, resident of Kivalina, Alaska
Enok Adams, resident of Kivalina, Alaska
James Agee, emeritus professor, Forest resources, University of Washington
Buzz Aldrin, Astronaut
Chris Andrews, California Academy of Sciences
Randy Atkins, American Physical Society
Norm Augustine, US Space Flight Review Committee
Dr.James Baldini, paleoclimatologist, Durham University
Dr. Lisa Baldini, paleoclimatologist, Durham University
David Barrett, Olin College of Engineering
Alan Bean, Astronaut
Daniel Becker, Safe Climate Change
Rod Beckstrom, former director National Cyber Security Center
Sam Bethea, Entergy/Texas
Paul Bledsoe, National Commission on Energy Policy
Dr. Robert UC-San Francisco
Jason Bobe, DIY Biology
Greg Bonfiglio, Proteus Venture Partners
Doug Boyer, Levee Commissioner
Jeff and Barb Boyer, farmers
William Boyle, Nobel Prize Winner, Physics, 2009
Gina Brazao, student participant, Future Cities
Roger Brent, critic of DIY Biology
Eric Brown, FDA
David Butcher, Colorado Public Health Laboratory

Capt. Patrick Callahan, Massachusetts National Guard
David Cameron, Harvard Medical School
Andrew Chaikin, author
Leroy Chiao, Astronaut
Willy Chiu, IBM
Eric Chivian, Harvard University
Dr. Michael Clarke, Stanford School of Medicine
Albert Clay, Entergy/Texas
Thomas Cochran, NRDCl
Leslie Collins, National Engineers Week Foundation
Gordon Cook, Scottish Universities Environmental Research Centre
Mac Cowell, DIY Biology
Charles Cranfill, Los Alamos National Laboratory
Madelyn Creedon, DOE
Alicia Cronquist, Colorado Department of Public Health
Adam Culbert, teacher, Gates Intermediate School
Charles Dean, Qinetiq
Yvo De Boer, UNFCCC
Mariette DiChristina, Scientific American
Tom DeHaven, Flatiron-Mason
John Densberger, Lawrence Livermore National Laboratory
David Diss, Colorado State University
Joe Domino, Entergy/Texas
Sid Drell, Prof. emeritus, Stanford Linear Accelerator
Bob Drewes, California Academy of Sciences
Jack Duff, student participant, Future Cities
Ret. Admiral Joe Dye, irobots
Simon Dyer, Environmentalist
Charlie Eckberg, environmentalist
Michael g. Edwards, Venoco, Inc.
Judge Ed Emmett, Harris County Commissioners Court
Drew Endy, synthetic biologist
Brian Fisher, California Academy of Sciences
Steve Gaudet, Syncrude
Margot Gerritsen, Stanford University
Brig. Gen. Thomas Gioconda, DOE
Alexander Glass, UC-Berkeley
Peter Goldmark, Comm.of Public Lands, WA
Earl Gray, National Health and Environmental Effects Research Laboratory
Brian Green, Deputy Assist. Secy of Defense
Tom Grizzard, farmer
Terry Gupton, cattle rancher
Kevin Gutknect, Minnesota Department of Transportation
Craig Haggerty, Centerpoint Power
Ron Hall, TVA
John Hanley, Manager, Constellation Program, NASA

Will Happer, Princeton University
Andrew Hargadon, UC-Davis
Brian Hart, inventor
Larry Hartig, Alaska Department of Environmental Conservation
Becki Heath, U.S. Forest Service
Connie Hedegaard, UN Climate Change Conference
Stephen Hentges, American Chemistry Council
Ernie Higgins, CalEnergy
Michael Holland, Compound Media
Jeffrey Hollender,7th generation
Andy Horne, Imperial Valley County Commissioner
Rep. Duncan Hunter
Randy Jirtle, Duke University
Charles Kao, Nobel Prize winner, Physics, 2009
Dan Kammen, UC-Berkeley
Rebecca Kauffman, Southern Ute Alternative Energy
Heather Kendall-Miller, Native American Rights Fund
Christine Keys, FDA
Ray Kidder, physicist, nuclear weapons designer
Tom Knight, MIT
Steve Koonin,CalTech
Dr. Arnold Kriegstein, UC-San Francisco, Institute of Regeneration Medicine
Linda Krop, Environmental Defense Center
Matt Landon, United Mountain Defense
C. Owen Lovejoy, Kent State University
Kelli Ludlum, American Farm Bureau
Bruce Luyendyk, UC-Santa Barbara
Drew Malcomb, DOE
Tim Marquez, Venoco, Inc.
Michael May, former director of Lawrence Livermore National Laboratory
Katie Maple McBride, GM
Dr. Ross McEwing, Trade Wildlife Forensics Unit
Ruth McKernan, Pfizer
John McTague, UC-Santa Barbara
George Miller, Lawrence Livermore National Laboratory
Ed Moses, Lawrence Livermore National Laboratory
Richard Muller, UC-Berkeley
David Nahai, LA Power and Water
Mary Nichols, California Air Resources Board
Marianna Naum, FDA
Percy Nayokpuk, Shishmaref, Alaska
Rhetha Newbold, NIH
Colette Niazmand , Tesla Motors
Daniel Nocera, MIT
Rep. Jim Oberstar
Thomas Okarma, Geron Corporation

Trish Opheen, Alaska District, Army Corps of Engineers.
Racquel Palmese, Green Technolog.org
Christopher Paine, NRDC
Bob Park, American Physical Society
David Paulison, FEMA
Mary Peters, Secy of Transportation
Michael Pollan, "In Defense of Food"
Carl Pope, Sierra Club
Susan Prichard, Forest Ecologist, University of Washington
Ellen Purdy, DOD
Bob Quinn, Qinetiq
John Reilly, MIT
Rob Renner, Canadian Environmental Minister
Randy Rettberg, MIT
Billy Reynolds, Entergy/Texas
Jesse Reynolds, Center for Genetics and Society
Mike Reynolds, Architect
Burton Richter, Stanford University
Steve Roberson, Qinetiq
Alan Roberts, National Wildlife Crime Unit, Kenya
Jay Rogers, CEO, Local Motors
Don Sadoway, MIT
April Sall, California Desert Coalition
Jennifer Sass, NRDC
Paul Schmerbach, Tennessee Department of Environment and Conservation
Christopher Thomas Scott, Stanford University
Rep. James Sensenbrenner, Jr.
Dr. Adam Scaife, Met Office, Hadley Center
Pam Schaller, California Academy of Sciences
Meredith Seife, Dept. of Health and Human Services
Bart Shepherd, California Academy of Sciences
Carol Shield, University of Minnesota
Pam Silver, Harvard Medical School
Col Robert Sinkler, Army Corps of Engineers
Rob Socolow, Princeton University
Heather Sohl, WWF/UK
Joe Sparano, Western States Petroleum Assn
Pierre Sprey, Defense consultant
Dr. Deepak Srivastava, Gladstone Institute of Cardiovascular Disease
Stephanie Stone, California Academy of Sciences
David Sykuta, Illinois Petroleum Council
Rep. Ellen Tauscher
Ross Tessien, Impulse Devices
Ross Tierney, Jupiter Direct, NASA
Dr.Alan Trouson, California Institute for Regenerative Medicine
Valerie Tucker, Gladstone Institute of Cardiovascular Disease

Rishi Tyagi, US Department of Interior
Bill Waddell, Army War College
Harlan Watson, House Committee on Science
Jim Wells, GAO
Gary Wessel, Brown University
Perry and John Weyiowanna, native hunters
Tim White, Univ of California, Berkeley
Bryan Willson, Colorado State University
Jean Wilson, Staff, Energy and Water Subcommittee
Xianmin Zeng, researcher buck institute

SCIENCE SEGMENTS

*Invasive Carp Threaten Lake Michigan (7/3/06)
Tracing DNA (7/20/06)
RFID (8/17/06)
Classifying Pluto -setup tape & studio (8/16/06)
Gas Drilling in Pinedale WY (8/22/06)
Pluto Downsized –setup & studio (8/24/06)
Bias against Women in Science – setup & studio (9/19/06)
*Prosthetics: Advanced Step (9/19/06)
Mars Crater – studio (9/29/06)
Father & Son Nobel Prize – setup & studio (10/4/06)
NextFest Technology (10/27/06)
Hubble Decision – setup & studio (10/31/06)
Science Desk: Global Warming & Fish – studio (11/3/06)
World Trade Center Dust (11/21/06)
Spinach and e-Coli (11/22/06)
Man on the Moon? – studio (12/5/06)
Water on Mars? – studio (12/7/06)
Science Year End Wrap Up (12/29/06)
Stem Cells & Amniotic Fluid – setup & studio (1/7/07)
Boeing Dreamliner (1/9/07)
Debating Pluto (1/31/07)
Stonehenge - setup & studio (1/31/07)
UN Global Warming Study – studio (2/2/07)
Brain on Music (2/5/07)
Irradiated Food (2/8/07)
El Salvador—Tracing Kids' DNA (2/15/07)
*e-Waste in India (2/19/07)
Dogs and Cancer (3/15/07)
Secrets of the Ocean Deep –studio (3/16/07)
*Missing Bees (4/3/07)
Climate Change: Eileen Claussen – studio (4/10/07)
Climate Change: Daniel Rosenblum – studio (4/11/07)

*Cellphones & GPS (4/11/07)
Climate Change: Bjorn Lomburg – studio (4/25/07)
Einstein Biography (4/26/07)
Climate Change: Coal – studio (5/1/07)
Steven Chu Profile (5/2/07)
Intel Chips (5/8/07)
FAA Aging Pilots (5/8/07)
Engineers & Oakland Freeway Collapse (5/10/07)
Climate Change: Marty Hoffert - studio (5/10/07)
*Uncovering Jamestown (5/14/07)
Alaska Students & NASA THEMIS Project (5/16/07)
NASA Moon/Mars Mission (5/31/07)
Food Safety (6/1/07)
Mimicking Embryonic Stem Cells – studio (6/7/07)
Oregon Climatologist (6/21/07)
Baseball Physics (7/12/07)
Deep Ocean (7/16/07)
*Viking Treasure Unearthed (7/19/07)
Disappearing Birds (7/31/07)
Greenland (8/1/07)
Teacher into Space (8/7/07)
Engineering Bridges (8/13/07)
Digitizing Traditional Knowledge (8/13/07)
Earthquake Proofing Schools (8/23/07)
DNA/Craig Venter Interview -studio (9/4/07)
*Race for Arctic Gas (9/10/07)
*Arctic Seed Bank (9/13/07)
Sputnik Anniversary - studio (10/3/07)
Nobel Prize: Gene Modification - studio (10/8/07)
California & Stem Cells (10/08/07)
Ethanol Boom (10/9/07)
Solar Decathlon (10/23/07)
BPA- Plastic Bottles (10/30/07)
New Planet (11/7/07)
Cloning Monkey Embryos -studio (11/15/07)
Call to Action: UN Climate Change – studio (11/19/07)
Smartphones (11/20/07)
Stem Cell Debate w/Ken Miller (studio) (11/20/07)
One Laptop per Child – studio (11/22/07)
Concussions & High School Students (11/26/07)
Engineers without Borders (12/7/07)
Alaska: Aircraft & New GPS (12/12/07)
Spotted Owl (12/18/07)
Minnesota Bridge Collapse and Engineering Answers – studio (1/15/08)
Satellite Shot Down -studio (1/20/08)
Bluray vs DVD – studio (2/19/08)

Dinosaur Display (2/21/07)
Carbon Offsets (3/6/08)
Pharmaceuticals in the Water –studio (3/10/08)
*Toxic Trailers Part I (3/13/08)
*Toxic Trailers Part 2 (3/14/08)
*Toilet to Tap (3/24/08)
Disintegrating Ice Shelf – studio (3/26/08)
*Bangladesh Climate Change (3/28/08)
Geroscience (3/31/08)
High Tech High (4/17/08)
Pittsburgh Robototics (4/23/08)
Genetic Discrimination -studio (4/25/08)
Green Tech from Rust Belt (5/12/08)
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BPA Update (5/20/08)
Supernova (5/21/08)
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Cloned Beef (5/27/08)
Climate Change – studio (5/28/08)
China's Polluted Skies (5/28/08)
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Monkey Brains - studio (5/29/08)
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Iowa Floods – Geography (6/23/08)
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Alaska's Sinking Villages (7/10/08)
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Couch Potato Pill - studio (8/1/08)
Gorilla Discovery –studio (8/5/08)
*Bottled Water Battle (8/18/08)
*High Tech High (8/20/08)
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*Stormwater Runoff (10/8/08)
*Penn. Aging Bridges: Blueprint Nation (10/20/08)
*Port in Trouble: Blueprint Nation (10/21/08)
*Urban Sprawl: Blueprint America (10/22/08)
*Decaying Airports: Blueprint Nation (10/23/08)
*Boston's Big Dig: Blueprint Nation (10/24/08)
*Trout and Drought(10/31/08)
*India: Cars (11/11/08)

*Dementia Research (11/12/08)
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*India: Coke vs Water (11/17/08)
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CA Stem Cells Update (1/29/09)
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*DC Transit Problems: Blueprint Nation (3/10/09)
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*Carbon Clock (6/30/09)
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Moon Landing Anniversary (7/20/09)
*Forensic Clues to Poaching (8/6/09)
*"Zombie" Highways? Blueprint Nation (8/11/09)
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ONLINE EXCLUSIVES FOR NSF GRANT

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ACTIVITIES AND FINDINGS

Project Activities

Research and Education Activities:

Over the past three years of the grant, we feel that we met the goals that we aimed to achieve:

1. To produce more programs with a focus on engineering and technology
2. Add more graphics to the science reports where applicable
3. Produce science reports that where news worthy
4. Focus on the major issues of the day such as energy and global warming
5. Establish successful partnerships with other NSF-funded groups including Quest, PolarPalooza, the Carnegie Museum and the California Academy of Science.
6. Build on each year's successful partnerships and engage more science museums, centers and entities in robust collaborations to extend the reach of the NewsHour science reports into the informal education arena.
7. Conduct an on-going evaluation process that will enable us to learn and adapt our outreach and program plans with the feedback received from our audiences and evaluation team.
8. Increase the outreach to the general public and to underserved minorities. `

Additionally, we have continued to conduct extensive research and background interviews with scientists. Our literature review includes reading the professional journals, periodicals, Internet postings and science for the general public like SEED magazine in addition to regularly consulting with our science advisors. Through these activities, we continue to capture the most valid research findings and to identify the scientists that are best able to explain their work to the public on camera. Furthermore, we have reviewed other science directed television programming and sought advice from our formal science advisors and our informal science museum and center directors on how best to introduce informal science subjects to the general public. Our Extra online science outreach team also expanded their science resources for teachers and students and at the same time, they have been invaluable with their suggestions from the field. The Science Outreach team conducted workshops, forums and other venues to share the Science Segment content with the general public, teachers, science teachers and science bloggers. To date, our outreach team has developed partnerships with 28 Science Museums and are launching a monthly partnership with the Ballston Science and Technology Alliance to use our science reports to introduce their monthly Science Cafés. Our future goal is to use this partnership as a model and replicated it with other partners over the following year. Attached please find the following: list of lesson plans developed by Online Extra to accompany the Science reports; the list of science museum and centers partners and a list of the broadcasts.

Findings

Over the years, we combined the feedback from our viewers, our evaluators' studies, our formal and informal science advisors and our education outreach team's interviews and conversations held at conferences and other public sessions. Together the feedback has uncovered the following findings:
1. Viewers, teachers and general public are more likely to use our science reports as learning tools if the science reports are edited to be 3 to 6 minute version. This length is much easier to work into the classroom material, science museum public session or an after school program.
2. Viewers are surprised and interested to learn that we have regular science segments and are much more likely to watch the program after we send them e-alerts indicating that the science report will air. While they are very interested in receiving the e-alerts, their preference is to have a regular committed time for science reports.
3. Scientists and other professionals are also interested in learning about our science reports and through our science museums and centers network we have been given suggestions on other stories or topics to be covered. Our science reports are covered by science bloggers who also give us advice on topics for future stories.

4. Science Museums and Centers request a variety of science reports in various lengths as they view the reports as a great resource that they can adapt to their specific center's needs. Whether it's for a teacher training session, a public session, a kiosk or a student science class, the NewsHour Science Reports are the perfect visual to introduce a topic. Currently our science archive holds 170 titles on a diverse number of topics.

5. Education continues to be a major component of the program's science coverage. Our Web site's NewsHour Extra has enjoyed an eight-year track record of attracting younger people to the NewsHour brand with original reports written at a 10th grade reading level; lesson plans and teacher tools for STEM content; and student-generated material. In the 2008-2009 school year, NewsHour Extra science content had 92,987 unique users view 122,132 pages, according to Google Analytics. Some 78,321 educators used the lesson plans, and 17,644 students used the stories written for the young audience. The website address is: http://www.pbs.org/newshour/extra/teachers/science/)

Overall our viewers responded very favorably to our upgraded website because its features were easier to navigate and they found it easier to locate a specific story of interest.

Lessons learned:

1. Strategic partnerships enhanced our ability to reach more audiences and a diverse population via our network of science museum and centers. By collaborating with them on public sessions, exhibits and special science programs we have extended our reach into a diverse set of audiences. Through the network of museums and centers we are targeting under-served populations using their outreach and relationships.

2. By making our archive of science reports available to our science partners in a variety of formats and lengths we are able to appeal to many more teachers and science centers who have requested shorter versions of the original report to fit their curriculum.
3. Featuring science reports, slide shows etc on the website on a regular basis has helped us to build audiences by appealing to those people who are visiting our website seeking science reports.
4. Through our PBS affiliates—PBS stations that have relationships with their local science centers--we were able to create more science programming around a project being funded by CPB as was the case in the St. Louis Spotlights Cities." We hosted a science event at the Danforth Plant Science Center and the event was broadcast on their local PBS station. Additionally, St. Louis PBS was able to assist us in recruiting local high school science students and teachers and provided us with a venue to host a focus group featuring several of our science reports. The results are included in the attached evaluation.
5. Using the feedback from our viewers, focus groups, advisors and survey results, we were able to create more synergy between broadcast and online, with forums, slide shows, and on air mentions of the online content. This content has greatly enhanced our online content.
6. We have learned what works for building an audience for serious science news and what doesn't. For example, Facebook was not a success for us. But Twitter was perfect for news and science enthusiasts.

7. Over the past three years, we focused on topics of critical interest to the country—ie energy, infrastructure, climate change. Additionally, we used topics of interest and covered them from a variety of angles.

Training and Development

Our education outreach staff has been trained to conduct focus groups, presentations, workshops, etc., on how to use the Science DVDs as learning tools and how to teach an audience how to use them in their informal or formal learning settings. Each of the team is versed on the importance of using broadcast quality science reporting as a means to engage the audience and inform the audience on current events in science. The purpose of our education outreach is to help all citizens become more engaged in science topics of importance and give them the information to assist them in taking action. Additionally, our Online Extra staff continues to work with science teachers and students instructing them on how to use the science reports both broadcast and online in a formal education setting. Our outreach efforts are aimed at both the informal and formal science learning audiences. The science reports are at the juncture of informal and formal science education.

Outreach Activities

During the previous year we significantly expanded our informal advisory group of science museums and centers from around the country, Canada and New Zealand. Feedback from this group of 28 institutions has informed our outreach plans. Leveraging our partnerships with Science Museums and Centers we plan to strategically focus future activities on developing and expanding partnerships with museums and other informal science groups, seeking opportunities to collaborate on multiple public sessions, and creatively looking for ways to capitalize on NewsHour broadcast and online opportunities to develop a science event and/or programs.

By expanding our existing museum network, we continue to broaden the numbers of viewers interested in our broadcast and online science reports in general as well as on reports about specific topics of interest, and to increase the use of our science content in informal education settings.

As outlined in our research findings, here is the outline of our activities:

- Conduct workshops and sessions at conferences.
- Host public science events with Ballston Alliance for Science and Technology
- Attend conferences and exhibit at the following:
- AAAS Annual Meeting
- National Science Teachers Association
- National Educational Computing Conference
- Association of Science and Technology Centers
- National Historically Black Colleges and Universities
- Develop Partnerships with State Science Museums and expanded the core group of 5 partnerships to 28 partnerships
- Outreach to Teachers via the conferences and through our Online Extra where we feature lesson plans based on the NewsHour Science Programs;
- General Public outreach includes our work with Films Media Group and our work with the American Library Association where we will present at their annual meeting.
- To communicate with underserved populations we are reaching out via the conferences, work with the AAAS and the Museums.
- Outreach via Websites: we are collaborating with the National Science Digital Library to share our content and we are also linking with WGBH PBS teacher resources to do the same.

Advisor feedback

Our advisors suggested we feature the science reports on a regular basis perhaps on the website if not on the broadcast. This will assist us in building the viewer audience as a regularly scheduled program is easier to remember to watch, like Science Fridays on NPR and Science Tuesdays in the New York Times. Our advisors were very complimentary of the science reports' content and treatment and they thought the increased number of infrastructure and engineering stories were important to engage

more of the general public into the importance of science because the stories relate to topics in their everyday life.
In fact, the engineers among our advisors suggested we change the name of our website to Science and Engineering to better reflect what topics we cover. One advisor even suggested we try meta-data tagging the reports to be able to get more hits from those interested in engineering stories.

As for story ideas...one advisor suggested that we look more at the rapid evolution of the technology surrounding induced pluripotent stem cells, and the ethical and safety concerns that it raises. Two of our advisors wanted us to produce more reports on climate change, in particular the new information about the melting of major ice caps; the problems posed by black carbon; the growing need to find solutions for solar storage. We have incorporated almost all of the suggestions and are planning to have a regular science presence online as soon as we secure funding.

Finally, the advisors all agreed that the use of Twitter and YouTube featuring the PBS NewsHour Science Reports was pivotal in gaining the younger viewers. They suggested that we distinguish the science reports from the rest of the broadcast by using unique graphics.

The majority of the meeting was dedicated to assisting us in preparing for the next year's science reporting and considerable advice was given on how to keep the momentum going while we are seeking sustainable funding for the Science Reports.

CONTRIBUTIONS

Contributions within Discipline

Our Science Team continues to endeavor to make science a part of the general public's news. Our viewers' feedback tells us that we are making a significant contribution in the areas of the environment/global warming, space/astronomy, the war--medical breakthroughs and surviving brain damage, biology and technology. Our coverage has made science topics part of everyday conversation. Further, it stimulates more research and possibly debate. By showing the new frontiers in science through the lens of the scientists, the general public can experience the excitement of discovery. As in the past years, we have continued to have scientists and the general public as well as journalists email or call us with positive feedback on our science programs.

In addition, our new education outreach activities have added a feedback mechanism for our Science Unit team to utilize. We are better able to find out from the general public including teachers which programs work best, are the 'stickiest' in terms of keeping the audience's attention and have spurred the viewer to engage in more research about the subject. We have found that:
1. programs with the human element are more engaging;
2. programs featuring more graphics (visuals) are better understood

3. programs that have b-roll in the labs or in the field are better understood
4. scientists telling the story have more credibility than just journalists telling the science story.
5. programs featuring interviews with young scientists are much more engaging for the younger audiences we are attracting.

Contributions to Other Disciplines

Over the past six years, our outreach team has been able to create a "model" for other broadcast programs produced by the NewsHour—a model for successfully expanding the exposure of the NewsHour within groups that are not regular NewsHour viewers. By successfully building our outreach plan around a core group of strategic partnerships, our science outreach has built a network of science centers and museums that are now collaborating with us on ways to expand our reach into underserved populations. We now have a network of 28 science centers and museums and one Science Café where our science reports are featured monthly as the introduction to their panel discussions. This outreach model is also being used by the NewsHour Global Health Report team as a means in which to build our audience and network in the global health arena.

Other lessons learned are:
1. Asking our science partners to serve in on an informal advisory board giving each partner more ownership of the project.
2. Keeping the network partners informed of upcoming science programs; special NewsHour events like Spotlight Cities and interviews happening in their region give allows the science centers to give us invaluable feedback on the science reports and allows them to assist us in promoting our science reports within their audiences.
3. Featuring our science reports in science centers expands our reach into their audiences.
4. Featuring the Science Reports on YouTube draws a younger audience to our website and potentially to the broadcast.
5. Linking with our science partners via our website increased our online viewers.

Contributions to Human Resources Development

We take very seriously the demands of science journalism and the need for absolute accuracy and clarity. Our producers have gotten increasingly sophisticated over the years, knowing always to make one more call to check facts and figures, to check interpretations. In the process, they have become sophisticated science journalists.

Our science unit team continues to train new production people as they are added to the team. Our feedback from viewers has given us an appreciation for how our science programs can inspire and educate. Our outreach with the AAAS is giving us the opportunity to expand our outreach to minority populations and our outreach with the 28 science centers and museums has broadened our training and development impact. We take seriously our commitment to attract new blood to the field, and so have tried to do programs – like Future Cities with its middle school engineers, and DIY Biology with its

IGEM competition. Our belief is that our programming influences young people to explore the science, engineering and technology career paths by exposing young adults to these professions through engaging profiles with real scientists. Additionally, we believe that our science reports featured on our online science page has increased our young student and post graduate audience.

Contributions to Resources for Research and Education

When so much of television news programs these days is opinion, we strove to make our science pieces fact and data-based. While we have scientists who had different opinions, or regular citizens who questioned science, we continue to always include enough facts so that the viewer could make an informed decision. We think we set a model for how science can be covered seriously and informatively; with enough pacing and interesting characters to move the story forward, but without sacrificing content.

Contribution outside science and engineering

Our education outreach and our evaluation process have given us a feedback mechanism for our team to receive viewers' impressions on our programs. After our program about the father who dedicated himself to developing robots that will take the place of soldiers in war zones after his only son was killed in Iraq, the viewer mail was tremendously revealing from students, teachers and the general public who were looking for more information on military defense weaponry and the inventor. In addition, our programs on infrastructure and technology are always very well received and the marrying of science as in global warming and its effect on economics and the environment definitely informs the public and crosses over from science and education to economics. It is always rewarding to learn that our programs do inspire other public welfare beyond science. Finally, our workshops at science and technology conferences, partnerships with museums and other associations involved with science or technology or education has provided us a forum to engage the public and get their feedback on how we can use science to provoke more interest in other topics like economics, health, and societial issues.

Online Summary
Please see our education outreach as it outlines our contribution to digital libraries, and education activities. Here is the summary:

The entire list of Online Science Reports are featured at:
http://www.pbs.org/newshour/topic/science/2009.html
Because NewsHour science reports are rich, engaging stories, we use the video as the primary resource for flexible lesson plans aligned to national standards.

We have worked with Teacher's Domain to input some of these. Here is a report from the NewsHour correspondent Spencer Michels on ongoing efforts to produce fusion energy to help fuel American energy independence. The video includes interviews with

scientists at the Lawrence Livermore National Lab in California and an animation of fusion.
http://www.teachersdomain.org/resource/nhsci.tech.fusion/

We will soon be working with the new PBS complement to Teacher's Domain, the PBS Digital Learning Library. We were selected to take part in the producers' pilot and the goal is that all assets inputted to DLL will be visible in Teacher's Domain, Maryland Public Television's Thinkport, Utah's Education Network and several other local station services in the works. NewsHour science reports will be the first ones into the system, and available to the 400,000 teachers already registered with Teacher's Domain.

Extra: News for Students

- H1N1 Heads Back to School
- HIV Vaccine Trial

NewsHour Science Report Education Outreach
Deliverables

KOSHLAND SCIENCE MUSEUM
WASHINGTON, DC

January 2009	Signed a partnership agreement with **Koshland Science Museum, Washington, DC**. Delivered 10 science reports edited down to 3-4 minutes for Koshland to use in their student tours of their museum. Linked our website with Koshland on related science tops. Partnered with Koshland on the writing of a grant proposal to Exxon/Mobil for producing a series of stories on emerging careers in science aimed at a high school audience.

BALLSTON SCIENCE & TECHNOLOGY ALLIANCE
ARLINGTON, VA

February 2009	Signed a partnership agreement with **Ballston Science and Technology Alliance**, **Arlington, VA**. We produce DVDs for them to show at the monthly Science Café's throughout 2009
February 19, 2009	Co-Hosted a public event with Ballston Science and Technology Center. Norm Augustine was the featured speaker, Les Crystal, President of MacNeil-Lehrer Productions was the interviewer. Audience of over 240 people and the feedback was extraordinary. When our other Science Centers and Museums heard of the public session, they offered to voluntarily pay for their museum to co-host another event if the NewsHour would get the speaker and interviewer and hold the event in a video conference facility –like Maryland Science Museum or Koshland. The other museums that opted into this event would invite their own audiences and their

audience would be able to Twitter their questions to the interviewer—thus creating interactivity. The next public session was to be held in late Fall 2009.

DANFORTH PLANT SCIENCE CENTER
ST. LOUIS, MO

April 22, 2009 — NewsHour partnered with the PBS affiliate in St. Louis, KETC and the Danforth Plant Science Museum on a public event that was moderated by NewsHour senior correspondent Judy Woodruff and televised locally in St. Louis. Following the public event, the NewsHour hosted a focus group of high school students to test the effectiveness of the messaging of the public event as well as the effectiveness of NewsHour science reports.

May 2009 — Held the first Informal Science Advisory Council conference call t plan future public sessions and add more science centers to our list partnering members. The membership is currently 28 members.

May 5 — Provided Ballston Science and Technology Alliance Science Café' with the DVD for the Topic: Sustainability and the Environment. NewsHour Science Reports offered to Ballston Alliance for their use:
Carbon Offset Plan Allows Businesses to Trade Environmental Credit:
http://www.pbs.org/newshour/bb/environment/jan-june08/carbon_03-06.html
Competition Puts Energy-Efficient Solar Homes on Display:
http://www.pbs.org/newshour/bb/environment/july-dec07/solar_10-23.html

June 2 — Provided Ballston Science and Technology Alliance Science Café' with the DVD for the Topic:
Oceans and Water. NewsHour Science Reports offered to Ballston Alliance for their use:
World's Oceans Face Plastic Pollution Problem:
http://www.pbs.org/newshour/bb/science/july-dec08/plasticocean_11-13.html
Water Recycling Efforts Spark Policy Debate:
http://www.pbs.org/newshour/bb/science/jan-june08/water_03-24.html

July 7 — Provided Ballston Science and Technology Alliance Science Café' with the DVD for the Topic:

	Astronomy. NewsHour Science Reports offered to Ballston Alliance for their use: Scientists, Students Study Space Storms: http://www.pbs.org/newshour/bb/science/jan-june07/themis_05-16.html Scientist Explains Final Moments of Dying Star: http://www.pbs.org/newshour/bb/science/jan-june08/supernova_05-21.html NASA Develops Plans for Moon-Mars Mission: http://www.pbs.org/newshour/bb/science/jan-june06/nasa_05-31.html
August 4	Provided the Ballston Science and Technology Alliance Science Café' with the DVD for the Topic: Weather and Climate. NewsHour Science Reports offered to Ballston Alliance for their use: Alaskan Village Copes with Real-life Impacts of Climate Change: http://www.pbs.org/newshour/bb/environment/july-dec08/alaskawarming_07-10.html After Major Cyclone, Bangladesh Worries about Climate Change: http://www.pbs.org/newshour/bb/environment/jan-june08/bangladesh_03-28.html Greenland Residents Detect Sea Changes: http://www.pbs.org/newshour/bb/environment/july-dec07/greenland_08-01.html
September 1	Provided the Ballston Science and Technology Alliance Science Café' with the DVD for the Topic: Biodiversity and Conservation. NewsHour Science Reports offered to Ballston Alliance for their use: Biologists Struggle to Save the Spotted Owl: http://www.pbs.org/newshour/bb/science/july-dec07/owl_12-18.html Common Grassland Birds Disappearing in the Midwest: http://www.pbs.org/newshour/bb/environment/july-dec07/birds_07-31.html Book Showcases Previously Unseen Sea Creatures: http://www.pbs.org/newshour/bb/science/july-dec07/oceans_07-16.html Bald Eagle Removed From Endangered Species List: http://www.pbs.org/newshour/bb/environment/jan-june07/eagle_06-28.html
December 1	Provided theBallston Science and Technology Alliance Science Café' with the DVD for the Topic: Science and Health. NewsHour Science Reports offered to Ballston Alliance for their use:

Scientists Track Source of Salmonella Outbreak Mystery:
http://www.pbs.org/newshour/bb/science/july-dec08/salmonella_09-10.html
Researchers Examine Impact of Exercise on Aging:
http://www.pbs.org/newshour/bb/science/jan-june08/aging_03-31.html
FDA's Cloned Beef Approval Ignites Debate:
http://www.pbs.org/newshour/bb/science/jan-june08/clonecows_05-27.html

Science Museum and Center Partners

Academy of National Sciences, Philadelphia, PA
Jacqueline Genovsi, Senior Director of Education

Cincinnati Museum Center, Cincinnati, OH
Tonya Matthews, Vice President of Museums
Regina Hall, Director of Exhibit Programs
Karen Venetian, Director of School Programs

Connecticut Science Center, Hartford, CT
Jake Mendelssohn, School Program Manager

COSI Science Center, Columbus, OH
Jen Snively, Vice President of Programs
Josh Sarver, Director of Program Content

Robin Dungan, Battelle Master Educator—Teacher Programs
David Chesebrough, President and CEO

Detroit Science Center, Detroit, MI
Marlene Baranda, Manager of Camps and Scouts

Discovery Center of Springfield, Springfield, MO
Laurie Duncan, Education Director

Donald Danforth Plant Science Center, St. Louis, MO
Maureen Herraghty, Librarian

ECHO Lake Aquarium and Science Center, Burlington, VT
Linda Bowden, Program Coordinator

Kirby Science Discovery Center, Sioux Falls, SD
Rosanne Kelly, Community Engagement Coordinator

Lawrence Hall of Science, Berkeley, CA
Elizabeth Stage, Director
Darrel Porcello, Director of the Center for Technology Innovation
Gretchen Walker, Director of Community and Visitor Programs

Liberty Science Center, Jersey City, NJ
Emlyn Koster, President and CEO
Mary Meluso, Associate Director—Public Relations
Dina Schipper, Director—Media Relations

Marian Koshland Science Museum, Washington, DC
Sapna Batish, Manager—Exhibits and Programs
Patrice Legro, Director

Maryland Science Center, Baltimore, MD
Van Reiner, President and CEO
Wendy Ackerman, Assistant Director

Museum of Discovery and Science, Ft. Lauderdale, FL
Kim Cavendish, President and CEO

Museum of Science, Boston MA
M.J. Morse, Manager—Current Science and Technology

National Science and Technology Centre, Kingston, AU
Brenton Honeyman, Manager, Executive Operations

Newark Museum Science Department, Newark, NJ
Maria Hertneck, Outreach Coordinator and Science Educator

New England Aquarium, Boston, MA
Jayshree Oberoi, Teacher Services Supervisor

New York Hall of Science, Queens, NY
Margaret Honey, President and CEO

Ontario Science Center, Ontario, CA
Karen Hager, Associate Director—Events and Public Programs

Peabody Museum of Natural History, Yale University, New Haven, CT
Terri Stern, Curriculum Specialist

Schenectady Museum & Suits-Bueche Planetarium, Schenectady, NY
Chris Hunter, Director of Archives and Collections

Science City at Union Station, Kansas, MO

Dianne Domino, Education Manager

Science Museum of Minnesota, St. Paul, MN
Laurie Fink, Program Director for Human Biology

Smithsonian Institution, Washington, DC
Jennifer Bine, Project Director—Smithsonian Institute Traveling Exhibition Service

The Field Museum of Natural History, Chicago, IL
Shelley Gustavson, Project Director

The Franklin Institute, Philadelphia, PA
Pete DeCarolis, Museum Educator

The Leonardo-Utah Science Center, Salt Lake City, UT
Joe Andrade, Executive Director

Underserved communities

Met with the Beacon Center Initiative in San Francisco to discuss using Science Reports at the centers for families, youth, and adults as an educational resource.

Provided 30 science DVDs with lists of accompanying online material for principals and teachers involved in the Urban Advantage Initiative in New York City.

Working with Derrek Kemp at the AAAS Historically Black Colleges and University undergraduate program, we sent science reports and online science exclusives to the head of the Historically Black Colleges and Universities radio and television network to be used as a resource for their student viewers and listeners.

Met with the Executive Director of the Offenders of Arlington Rehabilitation Center to discuss using our science reports in their educational programs for high school students who are returning from the penal system and are in need of educational resources especially in science and technology.

Making our resources more available online

* National Science Digital Library

We were put in contact with the National Science Digital Library editors through our science advisor Yolanda George, and held a meeting at the AAAS conference in February 2007. The editors immediately linked to our Health and Science & Technology archives of broadcast and online material, and are gradually incorporating our special reports. Adding our material to NSDL makes it more accessible to the many educators who

frequently use this online library and exposes us to a whole community of people interested in using digital resources.

* WGBH's Teachers' Domain

This site collects multimedia resources from public broadcasting programs and other sources in a searchable form for educators (and others). We have been talking with the producers about adding our broadcast and online science material.

* Kinetic Books -- online physics textbook and accompanying interactives

Provided editor Mark Bretl with lists of broadcast and online material that physics teachers may be interested in using to show their students about practical applications of physics theories.

* Other Web sites link to our material (for example, NOVA ScienceNOW, U.S. Geological Survey, Neil deGrasse Tyson's homepage, and polar research sites, Koshland Science Museum).

Future outreach projects

Our collaborations will include:
1. Public Events: During the next grant period we plan to conduct more public events at partner museums and science centers utilizing NewsHour video content, journalists, and scientists, who will participate in a public forum that will be teleconferenced with other museums/centers and archived online. An emphasis of this initiative will be to promote opportunities that highlight minority and women scientists and to include information about career opportunities in all the STEM categories. Part of this effort would be to seek out tie-ins with other NewsHour broadcast events (such as special series, field reports, etc.) taking place in a city with a science museum/center and to share NewsHour resources of journalists that might add a science component to this activity. Additionally, we plan to share our resources with a wider audience using *the.Sci*.

A totally new extension of The NewsHour's ISE project, the.sci will cover interesting STEM subjects in innovative and engaging ways. A non-commercial, Creative Commons licensed multi-platform tool, the.Sci is designed to broaden teen access to NewsHour STEM-related content, and is part of the.News, now in development as a source of current events for high school and middle school-aged teenagers. It specifically targets teens from underserved communities and/or at risk environments where its content, like other NewsHour-generated STEM content, is fully in sync with ISE Strand 6 as outlined in the NRC report. (Bell, et al. 2009). the.Sci will also create the opportunity to encourage identity building through teen access to information about STEM-related careers. (Bell, et al., 2009).

With the first educational use on the Internet of an online- hosted Adobe Premiere Express editing process in its You.edit feature, the.Sci will make available cloud-computing features for all teens with Internet access. YOU.edit will allow teenagers online in any ISE environment to create science-related videos using video, graphics, voice-overs and sound bites from material that aired on the.Sci, and, as funding becomes available, from an increasing amount of additional NewsHour STEM content. While more teens now have access to the Internet, many still do not have the tools to create or store their creations: You.edit should help bridge this new digital divide. YOU.edit will also include social networking options for those posting materials so that teens can share and collaborate in the experience of STEM-related content development.

Our program's merger of TV and online is the keystone of our goal to make our content available whenever and wherever our audience chooses to look for it, enabling The PBS NewsHour to produce the "right content" for the "right platform."

On our website, we will institute a regular weekly podcast and interactive feature to promote repeat visits to a redesigned STEM-oriented site. This weekly podcast interview, slated for the same day each week, and promoted on our broadcast with special graphics and, when available, video, would focus on a scientist, engineer or laboratory team whose work is making news that week and would translate the potentially complicated nature of their research. The weekly feature would be posted in a blog-like environment so that the audience can ask follow up questions. Several of our science advisers have already enthusiastically agreed to participate. This kind of online forum encourages Public Engagement in Science, for the benefit both of the viewer and of the scientist involved (CAISE, 2009).

These podcasts are one of the core pillars of a larger Web effort that will include reports, slideshows, and interactive content; that will share NewsHour STEM information with social media outlets like Facebook; and that will feature a NewsHour Science Twitter feed that will seek to connect to other science and research news outlets.

To build new audiences, we will partner with established journals such as Science and Nature, as well as our science museums, to promote the podcast on their website, alert members, and help us identify issues and particular scientists to interview. By this cross-branding, our partners will get to feature and promote their work to our audiences, and gain audio and video content they would not otherwise have. The NewsHour site will also explore syndication to third party websites.

Our website also will offer streaming video of our science reports using state of the art video player technology that provides a more immediate and higher quality video experience.

To maximize distribution, our goal is to align NSF-funded NewsHour reports with specific science disciplines and learning objectives in a streamlined process so that young people can easily find the right NewsHour video with ease. Videos in the PBS Digital

Learning Library will be tagged by age appropriateness and organized within hierarchies of commonly taught topical areas.

We will continue to search for ways to achieve the widest possible distribution: we have extended our STEM material from live broadcast to on demand, streaming video, online extensions, public and satellite radio, and audio podcasts; we are examining the next move into video podcasts, smart phones and other emerging platforms as they become viable.

2. Shared Newshour Content: Responding to requests from our current partners we will share edited NewsHour video content that can be utilized by museums and centers as part of exhibits; at their events; at student workshops; for their teacher professional development; and on their websites. Podcasts from the Science Desk can also be shared via web links to museum/center members and public. Upon request, transcripts of NewsHour science reports can also be posted on these websites. In addition, some museums, such as our partner in Columbus Ohio, COSI , have invited us to provide content to the COSI Electronic Education Program, a national video conferencing initiative that provides schools a means to video conference with real scientists and experts in a variety of fields.

See above *the.Sci* for more ways we will be sharing our content with the student population.

3. Digital and Video Science Resource Library. Another request from our museum partners was for a vehicle to identify the NewsHour content available for their own use and for access by their public. In addition, they suggested the value in both sharing their own digital and video resources with other museums and science centers as well as with the NewsHour. Therefore, the NewsHour will take the lead in identifying this material and sharing best practices.

4. Weekly Science Blog: Working with our museum partners, the NewsHour will create a weekly science blog around current news in science, technology, engineering and math to be authored by members of our Formal Science Advisors (several of whom have already volunteered) and representatives/ experts from our museum partners.

5. Museum Partners Offer the NewsHour:

The Following opportunities:

- Sharing NewsHour science alerts with their membership and educator lists to inform them about upcoming science reports and to invite them to participate in Science Desk online evaluation surveys. For example, COSI has a monthly member e-news to 12,000 members and a teacher e-news and v-news of 8,000 teachers. They are eager to share NewsHour Science Desk information to this cohort.
- Links from their websites to the NewsHour Online Science site
- NewsHour content on Museum kiosks

6. Continue Relationship with Science Organizations: We will host an exhibit booth at ASTC and AAAS conferences where we have an opportunity to meet with our museum partners and through evaluation identify our successes and failures, as well as develop new collaborations in the future.

Conferences
* Historically Black Colleges and Universities
* Association of Science-Technology Centers
* National Science Teachers Association's 'Informal Science Day'

Contributions Beyond Science & Education

Our education outreach and our evaluation process have given us a feedback mechanism for our team to receive viewers' impressions of and suggestions for our programs. After our program about the father who dedicated himself to developing robots that will take the place of soldiers in war zones after his only son was killed in Iraq, the viewer mail was tremendously revealing from students, teachers and the general public who were looking for more information on military defense weaponry and the inventor. In addition, our programs on infrastructure and technology are always very well received and the marrying of science as in global warming and its effect on economics and the environment definitely informs the public and crosses over from science and education to economics. It is always rewarding to learn that our programs do inspire other public welfare beyond science.

Finally, our workshops at science and technology conferences, partnerships with museums and other associations involved with science or technology or education has provided us a forum to engage the public and get their feedback on how we can use science to provoke more interest in other topics like economics, health, and societal issues.

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Focus Group Study of
The New'sHour's Science Unit

Performed at the 2007 ASTC
(Association of Science-Technology Centers)
Annual Conference in Los Angeles, California on October 15, 2007

Report for

MacNeil/Lehrer Productions
2700 South Quincy Street
Arlington, VA 22206

by

Art Johnson

November 5, 2007

Research Report No. 07110504

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EVALUATION REPORT

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Focus Group Study of

The NewsHour's Science Unit

Executive Summary

November 5, 2007

EVALUATION DESIGN – The findings reported here focus on *The NewsHour's Science Unit,* developed by MacNeil/Lehrer Productions. Content of the *Science Unit* will appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all *Science Reports* are archived on the *Online NewsHour* Web site, which includes additional resources such as audio Podcasts, teacher lesson plans, background reports, slideshows, and interactives.

RESEARCH GOALS AND ISSUES – The general purposes for this study are to inform decision making about the efficacy of the *Science Unit's* video segments and Web site for diverse informal science center learning environments and outreach activities. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. In addition, attention was given to exploring the mutual benefits of building partnerships between *NewsHour* and science centers.

RESEARCH PROCEDURES – A 75-minute focus group session was performed for this evaluation study on October 15, 2007 with a sample selected from the 2007 ASTC (Association of Science-Technology Centers) Annual Conference in Los Angeles, California. The session obtained written and/or oral feedback from 26 conference attendees representing science centers/museums located in urban and suburban geographical settings.

Over the course of the focus group session participants provided feedback about project components presented by Lea Winerman (Associate Editor – Science, *Online NewsHour*). This approach permitted participants to comment, after reflection, on their institution's needs, staff use of news resources, use of *The NewsHour's Science Unit* in museum galleries, and avenues for collaboration. In conjunction with group discussions, a post-presentation questionnaire was employed to obtain a depth and breadth of quantitative and qualitative feedback.

Toward these ends, Lea Winerman described the project's components and explained its goals and objectives. Focus group participants were then asked to view a 10-minute video segment about alternative fuel research/technology, titled "Physicist Searchers for Alternative Fuel Technology," originally broadcast on May 2, 2007. Following the viewing, Lea Winerman demonstrated the *Online NewsHour's* content and features, with particular attention being given to the *Science Reports* area of the Web site. At the conclusion of the introductory presentation, Dr. Arthur Johnson conducted a group discussion and participants provided written responses to a printed questionnaire.

DEMOGRAPHICS – As previously specified, feedback was obtained from 26 ASTC Conference attendees (9 male, 17 female) representing urban and suburban science centers/museums listed in the report. While all of these focus group participants provided oral feedback during a post-presentation group discussion, completed written questionnaires were received from 20 of the participants (6 male, 14 female). Six members of the group reportedly have earned a doctorate, 9 have a master's degree, and 5 have a bachelor's degree. When asked to describe themselves, 19 of the 20 questionnaire respondents indicated that they are members of a science center staff, with several describing additional appointments/areas of responsibility specified in the report.

Asked how often they watch *The NewsHour with Jim Lehrer*, 25% of the respondents to this inquiry reportedly watch the broadcast a few times each month and 40% watch it a few times each year. More specifically, when asked how often they've viewed science reports on *The NewsHour*, a fourth of the respondents indicated that they have seen a science report

once or twice and half of the respondents indicated that they had not seen any of these science reports.

Probing further, when respondents were asked to specify all of the ways they have viewed/heard *NewsHour* science reports prior to Lea Winerman's presentation, 41.2% of the respondents said they had viewed the science reports on television, 52.9% viewed one or more as a streaming video via the *Online NewsHour* Web site, and one respondent had listened to *NewsHour* science reports on the radio. As a follow-up question, they asked to specify their *preferred* mode of receiving *NewsHour* science reports. Of these respondents, 76.5% expressed the desire to view streamed video on a Web site and 23.5% prefer viewing science reports on television.

Slightly more than half of the focus group participants had visited the *Online NewsHour* Web site (http://www.pbs.org/newshour) prior to Lea Winerman's presentation, with 20% visiting the site a few times and 35% having visited it once or twice. The distribution of *Online NewsHour* features that questionnaire respondents used prior to this study is presented in Table 7 in the report. The *Science Reports* main page has reportedly been the most used feature of *Online NewsHour* by these individuals.

SUMMARY OF FINDINGS – Research findings reported below resulted from an analysis of focus group participants' oral and written feedback. Every member of the group displayed strong interest in the project's components and in ways that their institutions can both utilize them and collaborate with *NewsHour* on further development and outreach efforts. Note that broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents actual oral and written remarks are included throughout the report. Readers are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback. A summary of key ideas that emerged from the focus group study are included as an appendix to the report.

Group Discussion Feedback

The summary of findings presented below were obtained from oral comments offered by focus group participants during a post-presentation discussion.

Polling the focus group revealed the unanimous opinion that there is a lack of quality, in-depth science news from reputable sources on television. Other participants expressed concern that controversy is frequently used as a vehicle to foster interest in a story or event. Similarly, science news, according to one participant, is typically presented as having two sides, regardless of whether or not the two sides are equally valid. A suggestion was made to correct the focus of science news presentations by having scientists explain the process of how they come to their conclusions and why they disagree, as opposed to just the fact that they disagree. There was a consensus of opinion that presenting the science rather than just presenting the debate would be a more beneficial tack to take. Selecting an "expert" who fits a particular point of view the program wants to convey and imbedding hidden agendas are other concerns expressed by members of the group.

There was unanimous agreement that ten-minute segments have educational value, but it's too long for use at a science center. One participant explained that in the active galleries two minutes is the "drop-off point" for visitor attention/interaction. There was an expressed need for "a more flexible format to show what's appropriate for the content of that moment and the context of where the video is located in the science center." One participant clarified the need for flexibility by explaining that "If this activity is something we're doing in conjunction with an exhibit and it provides more in-depth support for the information we're presenting in the exhibit, then this would be good. But if it stands on its own in the gallery or it's intended to trigger some other kinds of discussion, then it has to be short and sweet." These perceptions

garnered requests for two-minute segments or permission granted to science centers allowing them to edit the ten-minute segments in-house. Another expressed need is to be well informed about upcoming programming in a timely manner so that science centers can plan and package the video segments with other exhibit elements and activities around a theme.

Several participants voiced the idea that science centers have access to newsworthy stories, interview subjects, relevant exhibits, and other resources that would benefit *The NewsHour's Science Unit*. They also open the door for possible partnerships. When polled, there was strong unanimous interest in forming alliances between science centers and *The NewsHour*.

Since students constitute a primary audience for the *Science Unit*, the issue of helping teachers meet local and national curriculum standards was raised. While specifying curriculum connections is considered to be very important, one participant remarked that "The issue is identifying where a resource fits within the curriculum, not if it meets the standards." Another participant framed this issue from the perspective of informal education provided by science centers by explaining that "We are informal science. We're beyond the curricula. We're beyond the school. And although we're constantly being seduced into feeding the curricula, that's really not the major mission. We're about motivation, interest, and expansion. So, I think it's important to have curricular ties, but I don't think we want to overplay it."

When asked to specify key objectives that they think should be met by *The NewsHour's Science Unit*, several insights can be gleaned from the discussion that this inquiry generated. One participant, for example, described the importance of defining the content and scientific oversight for the project's partners. Science centers also need to know how much lead time they're going to have to review *Science Unit* materials in order to sign off on them. Another participant explained the importance of helping people understand the data collection process and where we are in the process of understanding a particular issue or field of science. She went on to say the pubic needs to understand what is known today and the additional research that needs to be conducted. It was suggested that science reports should "lead us up to the fact that you'll be doing another story on this as more data comes in." The rational for this suggestion reportedly is that "We often present science as having a fixed understanding, so when we change our understanding we lose a lot of credibility with the public."

Polling the focus group revealed a consensus of opinion that while there is currently a lot of information about science available on the Internet, issues such as accessibility, comprehensibility, and quality of coverage are problematic. Another challenge, one participant pointed out, is meeting the needs of multiple audiences in different contexts. As a way of meeting a broad range of educational needs, focus group participants reportedly value the avenues of interaction enabled by the Internet. One participant, for example, suggested that we "…let the visitor, guest, or user have more of a voice so it's not always us just presenting science. I like the idea that you can post questions to the scientists and have the scientists respond. I would keep looking at how we can break down the barriers to the public, who end up just being passive recipients, by using the Web to let them participate in the discussion in a way that we haven't really fostered at our centers or PBS." Another participant described film segments her science center has developed that incorporate interactive capabilities into them and then went on to explain: "…you have an expert there to have a conversation with, which makes the Web site more accessible for all levels from novice all the way up to the university student who wants to engage at a deeper level."

When asked how they and their institution would use *The NewsHour's* science resources (e.g., streaming video, audio Podcasts, program transcripts, etc.), one respondent explained that "one thing we're trying to do is bring in voice about how scientists became scientists." In support of this view, another respondent said: "I absolutely support the idea of talking about science from the perspective of where scientists come from and how they do their work."

Accomplishing this task, however, is a challenge, as pointed out by one respondent who noted: "For us, finding the scientists and developing the video is very time consuming, whereas you're already interviewing these scientists. It would be very helpful for us if you could take five more minutes to ask a couple of questions and then put that clip on your Web site as an inspiration." Another respondent indicated that "…one of the things I'm trying to do is get visitors to our museum to also visit our Web site. I like them to see our Web site as a content provider and as a place to stay for awhile, as opposed to putting a lot of links on there and driving them to other Web sites, including yours." She went on to ask "Is there a way that your stories could be provided not as a link, but put directly on our Web site as a resource, with your permission and proper credit of course?"

Focus group participants were asked if there are key science topics that they think are of interest to the public. Rather than listing topics, concern was expressed that stories are not often being viewed through the lens of science. One respondent, for example, said: "It would be nice to get a balanced story that was about the science." Another recommended: "Make the scientific process more apparent in how you present the science. Making it overt that these are observations would be very useful in a lot of contexts." Similarly, a respondent remarked: "I think having a focus on the science process itself would be enlightening for a lot of people. It's not easy for us to demonstrate." Another added: "We have to generate those inclusive, connective pictures in perspective because in many respects the science community doesn't do it."

Searching for ways to meet audience needs and to build partnerships between *The NewsHour* and science centers/museums, focus group participants were asked if there are resources, that they don't currently have, that this project could provide to help draw visitors to their institutions. A request was made by one respondent for this project to help them identify individuals who are able to help put a program together that uses *Science Unit* materials. Another respondent remarked: "You can be the diplomatic bridge builder who can bring in other outside colleagues who can partner with us on things actually at the museum itself." One respondent reported that "…it would be great if we all had *NewsHour* programs that we could plug into our schedule." An administrator from a suburban science center commented: "We're looking for ten-minute segments that are more applicable to families [second through fourth grade level]."

Asked whether or not it would be useful for *The NewsHour* to contact the local science center/museum in an area were its production team plans to film interviews with scientists/researchers and other newsmakers, there was unanimous agreement that this would be useful for both parties. One respondent to this inquiry, for example, remarked: "You would have a great PR partner to draw more traffic and more visits to your Web site and to your broadcasts." Another speculated: "At some point there could be twenty institutions who could participate in this event simultaneously."

Focus group participants were asked to describe the most useful thing that this project could do next. Responses included requests for "shorter, more rapid response segments;" "partners for film production;" "a prototype partnership to work on several different ideas would be ideal;" "adaptability of the content [shorten segments to two minutes and allow them to be plugged into science center Web sites];" "more in-depth content;" "[make segments] transferable to our Web site;" "We're always looking for partners for film production;" "I have a Web site and an outreach program that I could plug this into tomorrow;" "…we would make use of your materials and services very quickly;" and "We might actually use your film work in the exhibit spaces themselves in the gallery. That's when we would need a more strategic partnership on planning." Several people simultaneously concurred with each of these remarks as they were being spoken, especially the last one.

As a follow-up question, participants who expressed the need for shorter video segments were asked if they would need *The NewsHour* to edit the segments or if they just need the permission to edit segments themselves. This inquiry produced three key ideas. First, "If we collaborated early in the schedule on content development, outlines, and concepts and then worked with you creatively to shape a program suitable to our communication needs, then you could be the media vendor creating our product for us." Second, "[If] it's later in the schedule and you already have a show on a topic, such as ethanol, then you could provide us with a 2-minute version and a 10-minute version for use in our gallery as a price by package option." Third, "On KQED's Quest site [San Francisco, CA] they have code that you can use to embed it into your own Web page."

Asked for any additional suggestions that would improve the *Science Unit*, two recommendations emerged. First, "A museum's point person will help you form partnerships and open you up to all of the museum's resources." Second, "I think the format and seriousness of your news program and the grammar of a TV news correspondent should be retained… So even if it's cut down to two minutes, I think it should still retain some of the delivery mechanisms that news programs have… You have something very special. So don't get rid of too much." When focus group participants were asked if they would recommend *The NewsHour's Science Unit* to others, there was unanimous agreement that they would. This finding is corroborated by responses to a similar question contained in the written questionnaire discussed in the next section of this report.

Questionnaire Feedback

Findings presented below were obtained from written responses to a post-presentation questionnaire.

On average, the twenty focus group participants who responded to the post-presentation questionnaire gave *The NewsHour's Science Unit* an overall rating of 4.45 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). Questionnaire respondents rated the *Science Unit* as either "Very Good" (45%) or "Good" (55%). As a follow-up question, respondents to this inquiry were asked to describe their overall reactions to the *Science Unit*. Responses to this inquiry all convey positive perceptions (See report for quoted remarks).

Asked to describe the aspects of the *Science Unit* that they like the most, respondents offered a broad range of positive responses, which are included in the report. A fourth of these remarks focus on exploring partnership opportunities between *The NewsHour* and science centers/museums.

When asked to describe what they like least about the features that Lea Winerman presented (i.e., a presentation of the *Online NewsHour* Web site and viewing a 10-minute video segment about alternative fuel research/technology) a third of the responses received indicated that ten minutes is too long for showing video segments in a museum setting. Additional feedback is included in the report.

Participants were asked to rate their agreement or disagreement with fourteen positive statements about the *Science Unit*, shown in Table 9 in the report, using a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). On average, all of the statements received high agreement ratings. The two statements that respondents agreed with most are: (1) *The NewsHour* broadcast reports on science are informative; and (2) Overall, I think the *Science Unit* is a useful educational resource.

Focus group participants were asked to specify key objectives that they think should be met by *The NewsHour's Science Unit*. Their eleven broad ranging recommendations are included in the report. When asked to describe "turnkey" materials (e.g., video, Web resources, curricula, etc.) or shared activities (e.g., Boston Form and other public events) that *The NewsHour* might develop in partnership with participants' institutions, fifteen ideas are also

contained in the report. Probing further, when participants were asked to identify the types of institutions, networks, etc. their science centers/museums partner with, a large majority of the partnerships are formed with local entities.

Asked to describe what they would do to spread the word about *The NewsHour's Science Unit*, eleven respondents expressed a variety of thoughts that are quoted in the report. When it was explained to the focus group that this project is looking for science experts who can provide either on-camera or off-camera expertise, fourteen respondents offered a broad range of ideas. At the end of the questionnaire, focus group participants were asked if they would like to receive e-mail alerts about upcoming science broadcasts. They were also asked if they would like to participate in further *NewsHour* development or research. A total of fifteen participants answered in the affirmative to both questions and provided their contact information, which is included at the end of the report.

Focus Group Study of

The NewsHour's Science Unit

Performed at the 2007 ASTC
(Association of Science-Technology Centers)
Annual Conference in Los Angeles, California on October 15, 2007

November 5, 2007

Project Description

The findings reported here focus on *The NewsHour's Science Unit,* developed by MacNeil/Lehrer Productions. Content of the *Science Unit* will appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all *Science Reports* are archived on the *Online NewsHour* Web site, which includes additional resources such as audio Podcasts, teacher lesson plans, background reports, slideshows, and interactives. Video packages will be archived on the Web site both as complete segments and in discrete digital files available to students to use in multimedia authoring assignments.

Research Goals and Issues

The general purposes for this study are to inform decision making about the content, presentation design, and usability of the project's video segments and Web site. Attention was given to uncovering any obstacles, barriers or unintended negative effects that science center/museum administrators think may emerge. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. In addition, attention was given to exploring the mutual benefits of building partnerships between *NewsHour* and science centers. Toward these ends, both descriptive and explanatory findings are reported. This summary of findings contains a depth and breadth of feedback provided by focus group participants about current conceptions of *The NewsHour's Science Unit* components. This information was obtained from 26 representatives of science centers and museums.

The researcher (Dr. Arthur Johnson, Director of Edumetrics) looked for patterns in the quantitative and qualitative data specified in the following section of this summary report. Communication between the evaluator and project staff took place at the outset of research in order to review developments and agree upon specific evaluation issues. Toward these ends, in addition to obtaining demographic and background information, research methods focused on informing our understanding about the following key issues:

1. How do focus group participants rate *The NewsHour's Science Unit*, overall?
2. How do they describe their overall reactions to *The NewsHour's Science Unit*?
3. What do they like most and least about the features that were demonstrated at the beginning of the focus group session (i.e., a presentation of the *Online NewsHour* Web site and viewing a 10-minute video segment about alternative fuel research and technology)?
4. How strongly do they agree or disagree with the following statements?
    - *The NewsHour* broadcast report(s) on science are informative.
    - The report we viewed is effective in communicating science content.
    - The science report we viewed motivated me to learn more about the topic.
    - *Online NewsHour* is a useful resource for science information and concepts.
    - *Online NewsHour* provides features that are easy to use.
    - Viewing science reports via online streaming video is a valuable feature.
    - Listening to audio Podcasts of science reports is a valuable feature.
    - Access to transcripts of science reports is a valuable feature.
    - Teacher lesson plans are helpful.
    - I would like to receive RSS feeds from *The NewsHour*.
    - I will use *Online NewsHour* as an educational resource.
    - I will recommend *Online NewsHour* to others.
    - I will recommend *The NewsHour* broadcasts to others.
    - Overall, I think *The NewsHour's Science Unit* is a useful educational resource.

5. What key objectives do they think should be met by *The NewsHour's Science Unit*?
6. What "turnkey" materials (e.g., video, Web resources, curricula, etc.) or shared activities (e.g., Boston Forum and other public events) might we develop together?
7. What other institutions, networks, etc. do they partner with?
8. What would they do to spread the word about *The NewsHour's Science Unit*?
9. Can they recommend science experts who can provide either on-camera or off-camera expertise?
10. Do they think there is currently a lack of quality science news on television?
11. Is there currently an ample amount of quality science news on the Internet or is there a need for more?
12. How would they and/or their institution use *The NewsHour's* science resources (i.e., streaming video, audio Podcasts, transcripts, etc.)?
13. Are there key science topics that they think are of interest to the public?
14. What resources, that they don't currently have, could we provide to help draw visitors to their institution?
15. Would it be useful to contact the science center/museum in an area were we plan to conduct interviews for science reports?
16. What would be the most helpful thing that this project could do next?
17. If they want shorter segments, would they need us to edit them down or do they just need the permission to edit segments themselves?
18. Would they recommend *The NewsHour Science* Unit to others?
19. What suggestions, if any, do they have for improving *The NewsHour's Science Unit*?

Research Procedures

A 75-minute focus group session was performed for this evaluation study on October 15, 2007 with a sample selected from the 2007 ASTC (Association of Science-Technology Centers) Annual Conference in Los Angeles, California. The session obtained written and/or oral feedback from 26 conference attendees representing science centers/museums located in urban and suburban geographical settings. Applying a modified nominal group technique, the session was divided into the following seven activities:

- Statement of research issues;
- Review of project components and evaluation findings;
- Silent generation of ideas by participants regarding research issues;
- Writing down ideas;
- Group discussion of participants' ideas;
- Written response to post-presentation questionnaire;
- Rating of component content and features.

Over the course of the focus group session participants provided written and oral feedback about project components presented by Lea Winerman (Associate Editor – Science, *Online NewsHour*). This approach permitted participants to comment after reflection on their institution's needs, staff use of news resources, use of *The NewsHour's Science Unit* in museum galleries, and avenues for collaboration. In conjunction with group discussions, a post-presentation questionnaire was employed to obtain a depth and breadth of quantitative and qualitative feedback and to circumvent the influence of outspoken participants.

The feedback obtained informs our understanding about the efficacy of *The NewsHour's Science Unit* for diverse informal science center learning environments and outreach activities. This methodology also provides insights into planned and unplanned outcomes of project implementation. Such information will be considered by the project's designers and producers along with other data in order to make decisions about the final complexion of the project's various broadcast and Web-based components.

Toward these ends, Lea Winerman described the project's components and explained its goals and objectives. Focus group participants were then asked to view a 10-minute video segment about alternative fuel research/technology, titled "Physicist Searchers for Alternative Fuel Technology," originally broadcast on May 2, 2007. Following the viewing, Lea Winerman demonstrated the *Online NewsHour's* content and features, with particular attention being given to the *Science Reports* area of the Web site. Focus Group participants were asked to note the supporting curriculum elements contained on the project's Web site, which includes program transcripts, supplemental narratives, charts, images, archives, audio Podcasts, and teacher lesson plans. At the conclusion of the introductory presentation, Dr. Arthur Johnson (Director of Edumetrics) conducted a group discussion and participants provided written responses to a printed questionnaire.

Demographic & Background Variables

As previously specified, focus group research obtained feedback from 26 ASTC Conference attendees (9 male, 17 female) representing science centers/museums located in urban and suburban geographical settings. In addition to the institutions listed in Table 1, below, focus group participants include representatives from the National Science Foundation's Informal Science Education program (ISE), The National Science Digital Library (Arlington, VA), The Ontario Science Center (Toronto, Ontario, Canada), and Questacon – The National Science and Technology Centre (Kingston, Australia).

Table 1. Participating U.S. Science Centers/Museums

Institution	*City*	*State*
Carnegie Science Center	Pittsburgh	PA
COSI Science Center	Columbus	OH
The Discovery Center of Idaho	Boise	ID
ECHO Lake Aquarium and Science Center	Burlington	VT
The Exploratorium	San Francisco	CA
The Field Museum of Natural History	Chicago	IL
The Franklin Institute	Philadelphia	PA
Kirby Science Discovery Center	Sioux Falls	SD
Liberty Science Center	Jersey City	NJ
Maryland Science Center	Baltimore	MD
Museum of Discovery and Science	Ft. Lauderdale	FL
Museum of Science	Boston	MA
Oregon Museum of Science and Industry	Portland	OR
Pacific Science Center	Seattle	WA
Peabody Museum, Yale University	New Haven	CT
Science Museum of Minnesota	St. Paul	MN
Utah Science Center	Salt Lake City	UT

Of the 26 individuals who participated in this focus group study, 23 either signed in or provided their contact information on the post-discussion questionnaire. Table 2, on the following page, lists these individuals by name, title, and affiliation.

Table 2. Focus Group Participants

Participant	*Title*	*Affiliation*
Jaime Alonzo	Educ. Special Projects Coordinator	Peabody Museum, Yale University
Joe Andrade	Executive Director	Utah Science Center
Sandra Baril	Director, Museum Education	Oregon Museum of Science and Industry
Linda Bowden	Program Coordinator	ECHO Lake Aquarium and Sci. Center
Kim Cavendish	President and CEO	Museum of Discovery and Science
David Chesebrough	President and CEO	COSI Science Center
Jayatri Das	Senior Exhibit & Program Developer	The Franklin Institute
Laurie Fink	Program Director for Human Biology	Science Museum of Minnesota
Shelley Gustavson	Project Developer	The Field Museum of Natural History
Karen Hager	Assoc. Dir., Events & Public Programs	Ontario Science Center, Canada
Lareese Hall	Ecology Experience Project Mgr.	Carnegie Science Center
Janet Hong	Project Manager	The Field Museum of Natural History
Emlyn Koster	President and CEO	Liberty Science Center
Robin Marks	Multimedia Project Developer	The Exploratorium
Merryn McKinnon	Manager, Education & Outreach	National Sci. & Tech. Centre, Australia
MJ Morse	Mgr., Current Science & Technology	Museum of Science, Boston
Robert Payo	Education & Outreach Specialist	The National Science Digital Library
Van Reiner	President and CEO	Maryland Science Center
Dennis Schatz	Vice President of Education	Pacific Science Center
Woodey Sobey	Education Director	The Discovery Center of Idaho
Terri Stern	Curriculum Specialist	Peabody Museum, Yale University
Nancy Van Beek	Education Manager	Kirby Science Discovery Center
Sandra Welch	NSF Program Officer	National Science Foundation

Written questionnaire responses were obtained from 20 participants (6 male, 14 female). Of these respondents, 6 reportedly have earned a doctorate, 9 have a master's degree, and 5 have a bachelor's degree. When asked to describe themselves, respondents used one or more of the terms listed in Table 3. Note that 19 of the 20 questionnaire respondents indicated that they are members of a science center/museum staff.

Table 3. Participant's Areas of Responsibility

Categories	*Responses Received*
Science center/museum staff	19
Professional science organization staff	2
Science curriculum author or developer	2
Scientist	1
College or university educator	1
Professional development (K-12)	1

Focus group participants were asked how often they watch *The NewsHour with Jim Lehrer*. Table 4 shows that 5 (25%) of the respondents watch the broadcast frequently and 8 (40%) watch it occasionally.

Table 4. Frequency of Viewing The NewsHour with Jim Lehrer (N=20)

Categories	*Responses Received*
Always (a few times each week – daily)	0
Frequently (a few times each month)	5
Occasionally (a few times each year)	8
Only once or twice ever	5
I have never seen it	2

They were also asked how often they have viewed science reports on *The NewsHour with Jim Lehrer*. Table 5 shows that half of the respondents reportedly have never seen a science report and a fourth have seen a science report once or twice.

Table 5. Frequency of Viewing a NewsHour Science Report (N=20)

Categories	*Responses Received*
Always (whenever they're broadcast)	0
Frequently (a few times each month)	2
Occasionally (a few times each year)	3
Only once or twice ever	5
I have never seen a Science Report	10

Probing further, respondents were asked to specify all of the ways they have viewed/heard *NewsHour* science reports prior to Lea Winerman's presentation. Of the 17 respondents to this inquiry, 7 (41.2%) had viewed *NewsHour* science reports on television, 9 (52.9%) had viewed one or more as a streaming video via the *Online NewsHour* Web site, and one respondent had listened to *NewsHour* science reports on the radio.

As a follow-up question, respondents were asked to specify their *preferred* mode of receiving *NewsHour* science reports. Of the 17 respondents, 13 (76.5%) expressed the desire to view streamed video on a Web site and 4 (23.5%) prefer viewing science reports on television rather than accessing them from a DVD, Podcast, or any other media.

Slightly more than half of the focus group participants (55%) had visited the *Online NewsHour* Web site (http://www.pbs.org/newshour) prior to Lea Winerman's presentation. Table 6 shows that 4 (20%) had visited the site a few times and 7 (35%) had visited it once or twice.

Table 6. Frequency of Visiting Online NewsHour (N=20)

Categories	*Responses Received*
Always (a few times each week – daily)	0
Frequently (a few times each month)	0
Occasionally (a few times each year)	4
Only once or twice ever	7
I have never visited *Online NewsHour*	9

The distribution of *Online NewsHour* features that questionnaire respondents had used prior to this study, if any, is presented in Table 7. Note that the *Science Reports* main page has reportedly been the most used feature of *Online NewsHour* by these individuals.

Table 7. Online NewsHour Features Used by Questionnaire Respondents

Categories	*Responses Received*
Online NewsHour Main Page	4
Science Reports Main Page	8
Body and Brain Section	1
Earth and Environment Section	2
Space Section	2
Technology Section	1
Video	3
Archive	1
For Teachers: *NewsHour Extra*	0
RSS Feed	1
Search	0

Findings

Research findings reported below resulted from an analysis of focus group participants' oral and written feedback. Every member of the group displayed strong interest in the project's components and in ways that their institutions can both utilize them and collaborate with MacNeil/Lehrer Productions on further development and outreach efforts. Note that broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents actual oral and written remarks are included below. Readers are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback. A summary of key ideas that emerged from the focus group study is included as an appendix to the report.

Group Discussion Feedback

Findings and quoted remarks presented below were obtained from oral comments offered by focus group participants during a post-presentation group discussion.

Polling the focus group revealed the unanimous opinion that there is a lack of quality, in-depth science news from reputable sources on television. One participant, for example, made the following observation:

- *"I would agree that there is a lack of in-depth science news. There is a lot of news out there, but it's very difficult to get in-depth information from somebody that's reputable."*

Other participants expressed concern that controversy is frequently used as a vehicle to foster interest in a story or event. Similarly, science news, according to one participant, is typically presented as having two sides, regardless of whether or not the two sides are equally valid. A suggestion was made to correct the focus of science news presentations by having scientists explain the process of how they come to their conclusions and why they disagree, as opposed to just the fact that they disagree. There was a consensus of opinion that presenting the science rather than just presenting the debate would be a more beneficial tack to take. The following are respondents actual comments:

- *"Too often, controversy is presented just because it sells. The idea of equal and balanced coverage is to have someone from each side and it's not necessarily accurate science from both sides – it's just opinion."*
- *"Another problem with the current media is that science is always presented as having two sides, regardless of whether or not the two sides are equally valid. Cover the valid side of the issue as opposed to having two sides just for the sake of having two sides. Be good scientists rather than worrying about being politically correct."*
- *"I've actually participated numerous discussions about this very topic at this conference and I think it is difficult to cover science where there often is valid debate between scientists, and that's an interesting conflict, but it's difficult to cover without making the issue look confusing. Science is based on conclusions that scientists draw from facts that they gather, so rather than just having one scientist describe their findings and the implications, have the scientist say I think this because I put these points together and this is my argument. Then, have another scientist say I put these points together and this is my argument. To understand the process of how they come to their conclusions and why they disagree, as opposed to just the fact that they disagree, is the key idea. That's presenting the science rather than just presenting the debate. There's interest in this process."*

Selecting an "expert" who fits a particular point of view the program wants to convey and imbedding hidden agendas are other concerns expressed by members of the group.

- *"It's problematic when a news program selects an expert who fits a particular point of view the program wants to convey. For example, finding an expert who supports a program's point of view that all bridges in the U.S. are going to fall apart. While this person is perhaps an expert, they may have been selected to present a desired point of view. Guard against presenting hidden agendas"*

- *"My point actually builds on your concern about hidden agendas. I'm thinking more specifically about what we've been seeing for the past ten years in terms of medical news and new pharmaceuticals. We see things on commercial news shows that are clearly commercials, but they're presented as though they are a news story by saying that science has discovered this new drug for X and that's all you get. It's clearly coming right from the pharmaceutical company."*

There was unanimous agreement that ten-minute segments have educational value, but it's too long for use at a science center. One participant explained that in the active galleries two minutes is the "drop-off point" for visitor attention/interaction. There was an expressed need for "a more flexible format to show what's appropriate for the content of that moment and the context of where the video is located in the science center." One participant clarified the need for flexibility by explaining that "If this activity is something we're doing in conjunction with an exhibit and it provides more in-depth support for the information we're presenting in the exhibit, then this would be good. But if it stands on its own in the gallery or it's intended to trigger some other kinds of discussion, then it has to be short and sweet. These perceptions garnered requests for two-minute segments or permission granted to science centers allowing them to edit the ten-minute segments in-house.

- *"These ten minute segments are terrific, but they're much too long for us at a science center. So, we would want to edit or cut down each of those segments so that they're not so long."*
- *"On a related note, the Alternative Energy segment used a very traditional news format. Start with a quirky introduction, meet some characters, introduce some conflict, describe the problems they are solving. That's a very seductive format for a traditional television audience, but attention level drops off in two minutes if it's a standing element in a science center. The scientists in the video we just viewed [Steven Chu et al.] did a great job of explaining phenomena, or the interviewer did during the B-role shots, but we often have to splice in graphics were interview footage can't stands on it own. So, we need a more flexible format to show what's appropriate for the content of that moment and the context of where the video is located in the science center. If it was a different type of outreach, such as pulling up the Web site while you're sitting in the lunchroom, that's very different. But in the active galleries two minutes is our drop-off point. If more time is required, we inform visitors and let them choose to invest that time. They need to know what they're getting into."*
- *"If you're going to be addressing education in general, it could be a pre or post kind of activity that we could list with the kinds of offerings that we have. If this activity is something we're doing in conjunction with an exhibit and it provides more in-depth support for the information we're presenting in the exhibit, then this would be good. But if it stands on its own in the gallery or it's intended to trigger some other kinds of discussion, then it has to be short and sweet."*
- *"One of the things we really like to do at the Boston Museum of Science is produce our own news shows. It would be very helpful for us to have B-role because we are a very small team and we don't have the time to collect all of the B-role we need. Having someone like you provide B-role would be extremely helpful to us."*

Another expressed need is to be well informed about upcoming programming in a timely manner so that science centers can plan and package the video segments with other exhibit elements and activities around a theme.

- *"One of the things that a lot of us are trying to do now is more packaging around a theme and it takes some prep time. We also want to make sure we have an audience. Just throwing it out on the floor is random access and our return on investment is not nearly as good as when we can package it with other things that enable us to have schools and audiences lined up to participate. I'm curious as to whether you have enough lead time to let potential partners like us know the schedule and program descriptions for the next three months so that we have the ability to plan for ways to take advantage of your materials even before we see them. Can you provide us with an ongoing heads-up of what you know is coming so that we can select and zero in on things ahead of time? We're practically sitting on the Ohio State University campus, so we're always looking for who and what other elements we can add that will expand and/or*

create balanced activities. We would actually rather be upfront on the schedule rather than in the rears of the schedule."

- *"If you really want a partnership, then we need to be well informed. Otherwise it's just one of many, many resources out there that can be tapped into."*
- *"I'm interested in knowing how quickly you can be on top of a topic because I'm from the Ontario Science Center and we do daily current science news on the floor. Every day we have researchers who do what are called Headlines. They spend two hours every morning from 7:00 to 9:00 a.m. pulling in all the science headlines and then we develop what are called Hot Spots around them that are broadcast, so-to-speak, on our floor every day. Do you cover science stories on your Web site in the morning that occurred the night before? When you're able to, it would be helpful if you could give us the next layer after the story had broken."*
- *"I agree strongly with what's been said about heads-up information, two-way communication, and planning needs."*

Several participants voiced the idea that science centers have access to newsworthy stories, interview subjects, relevant exhibits, and other resources that would benefit *The NewsHour's Science Unit*. They also open the door for possible partnerships. When polled, there was strong unanimous interest in forming alliances between science centers and *The NewsHour*.

- *"The conversation, so far, is about how the science museum field can use your content in various ways. I just want to flip that around a little bit and say that we're both in the business of trying to build bridges between science and society and I think increasingly you might find in our institutions newsworthy stories on how we are trying to be the agents on the front line of giving information to the public through our medium in another facet of what you are about."*
- *"Many of us are trying to tie in a lot stronger with universities and their research and you might find that we can be working with people and topics that you might find of benefit."*
- *"You might think of the museum being the venue for the interview more often. We have access to interview subjects from the public because coming to the science center predisposes an interest at some level in related subject matter. For everyone of your stories there is probably a related exhibition that this field could help you to identify. So, rather than being only in the lab on the campus, bring this into the public domain by going to the science center as the place for the interview and opportunities for public interview subjects at the same time."*
- *"Something else you could do for any one of your stories very quickly is find where there are exhibits in science centers that are about that same topic as your story and you could list those as part of your segment. There will definitely be such exhibits."*
- *"A lot of us also have things on our Web sites that are hands-on or interactive activities that also relate to the content of your stories. Perhaps you could provide more than just a link to our site."*
- *"I'm Sandy Welch, I'm with the National Science Foundation, and I've crashed your breakfast [focus group session]. I just want to say that I was really excited a couple of days ago to see several of the science centers represented here in a presentation on what they're doing with Web 2.0 and all of the very creative new ways that science centers are starting to use the Web. Some of this is just emerging, but I saw all kinds of wonderful possibilities. The Ontario Science Center, working with TVO [Ontario's public educational media organization], is producing its own science that TVO broadcasts, there's an exchange there. COSI [Center Of Science and Industry – Columbus, OH] is doing really creative out-of-the-box kinds of things. I saw some things from Pacific Science Center [Seattle, WA]. I think there are new tools on the Internet that science centers are starting to use that could really connect with some of the tools that you [NewsHour] are going to be producing. The local/national connection is so important. Don't leave out your local Public Broadcasting Station. Many of you work with them now. The Web, to me, is one of the most exciting developments in terms of new tools and new ways to reach various kinds of audiences that we've never reached before. So I encourage you to keep asking about the needs for science news on the Internet."*

Since students constitute an important audience for the *Science Unit*, the issue of helping teachers meet local and national curriculum standards was raised. While specifying curriculum connections is considered to be very important, one participant remarked that "The issue is identifying where a resource fits within the curriculum, not if it meets the standards." Another participant framed this issue from the perspective of informal education provided by science centers by explaining that "We are informal science. We're beyond the curricula. We're beyond the school. And although we're constantly being seduced into feeding the curricula, that's really not the major mission. We're about motivation, interest, and expansion. So, I think it's important to have curricular ties, but I don't think we want to overplay it."

- *"We have a large involvement with teacher education around our state and one of the key things is to have a core set of materials. The abundance of enrichment materials has become overwhelming to teachers and to us. It's hard for us to offer recommendations to teachers, so we actually just push them all away at the moment. What would allow us to become much more proactive is being able to describe how a resource such as yours ties into the existing curricula rather than saying we have this new thing on ethanol. Teachers need to know where to imbed it into their instruction. Otherwise, there's too much out there. Teachers can't have their classes visit our science center unless they can justify exactly how an exhibit fits within their curriculum, and this is happening more and more across the country due to No Child Left Behind. They need to know how you fit into the day when they already have a full day and all of the materials that are available to them say they apply to meeting the National Curriculum Standards. The issue is identifying where a resource fits within the curriculum, not if it meets the standards. Find the five science curricula that are currently being used by the largest number of school districts across the country and show how it fits into them."*
- *"Specifying curriculum connections is very important, and I don't want to in any way argue against that, but we also have to get away from being bound by curricula. We are informal science. We're beyond the curricula. We're beyond the school. And although we're constantly being seduced into feeding the curricula, that's really not the major mission. We're about motivation, interest, and expansion. So, I think it's important to have curricular ties, but I don't think we want to overplay it."*
- *"I agree. For our major business, curriculum standards are not that important, but clearly you're doing something that relates to K-12, so in that environment when you're talking to NSTA [National Science Teachers Association] it will be a big issue."*

When asked to specify key objectives that they think should be met by *The NewsHour's Science Unit*, several insights can be gleaned from the discussion that this inquiry generated. One participant, for example, described the importance of defining the content and scientific oversight for the project's partners. Science centers also need to know how much lead time they're going to have to review *Science Unit* materials in order to sign off on them. Another participant explained the importance of helping people understand the data collection process and where we are in the process of understanding a particular issue or field of science. She went on to say the pubic needs to understand what is known today and the additional research that needs to be conducted. It was suggested that science reports should "Lead us up to the fact that you'll be doing another story on this as more data comes in." The rational for this suggestion reportedly is that "We often present science as having a fixed understanding, so when we change our understanding we lose a lot of credibility with the public."

- *"You will have to define the content and scientific oversight for your partners. Regarding what voices and what theories you should present, we have a very stringent academic division that oversees everything and they're very cautious about outside partnerships. They want to know who is the advisor on this project, what school of thought are they going to promote, and what other theories are they going to present. I understand that you want to come across as an unbiased news source, but who you interview and how much air time you give that individual is going to be really problematic for some. Tying into scheduling issues, our institution, especially the academic division will be very cautious about partnering with somebody unless they know exactly what they can approve, what they can't approve, and how much lead time they're going to have to review those materials in order to sign off on them. It just becomes a bureaucratic*

snowball, so you'll have to decide how much freedom you're giving those partners to help you create your product."

- *"We often present science as having a fixed understanding, so when we change our understanding we lose a lot of credibility with the public. The science ideas we covey have a perceived bias, so when people present unsubstantiated positions the public doesn't know how to sort that out. So I think when you're doing a story, what I'd like to hook onto is an understanding of the data collection process. Where are we in the process of understanding that field? Here's what we know today and here's the additional research that we know is going to be taking place. Lead us up to the fact that you'll be doing another story on this as more data comes in. We've totally confused the American public about what the process of science is and how decisions are made. What we've created is a society that increasingly has to make decisions based on an understanding of science, but we've crippled them in being able to make critical decisions around all this swirl of information and swirl of positions. So much has become politicized with scientific positions being identified with a party position. We somehow have to unravel this and the only way I can figure out how to unravel this is get back to the process of science and help people to understand how that moves. It's not going to happen overnight, but you have to keep pushing in that direction."*

Polling the focus group revealed a consensus of opinion that while there is currently a lot of information about science available on the Internet, issues such as accessibility, comprehensibility, and quality of coverage are problematic. Another challenge, one participant pointed out, is meeting the needs of multiple audiences in different contexts.

- *"I think there's a lot of stuff out there and I think a lot of it is good. The difficult part for people who aren't looking at it on a regular basis is, like everything on the Internet, just separating the good stuff from the bad stuff."*
- *"I think video and strong graphics are really essential because a lot of that excellent science is buried in text and that makes it a lot less attractive to people. The B-role, having flash animations, and all those kinds of ancillary components are helpful."*
- *"You want to be able to parse things out and you want to be able to customize and adapt them. That's the challenge of any good resource. Meeting the needs of multiple audiences in different contexts is a difficult challenge."*

As a way of meeting a broad range of educational needs, focus group participants reportedly value the avenues of interaction enabled by the Internet. One participant, for example, suggested that we "…let the visitor, guest, or user have more of a voice so it's not always us just presenting science. I like the idea that you can post questions to the scientists and have the scientists respond. I would keep looking at how we can break down the barriers to the public, who end up just being passive recipients, by using the Web to let them participate in the discussion in a way that we haven't really fostered at our centers or PBS." Another participant described film segments her science center has developed that incorporate interactive capabilities into them and then went on to explain: "…you have an expert there to have a conversation with, which makes the Web site more accessible for all levels from novice all the way up to the university student who wants to engage at a deeper level."

- *"I'm going to reinforce one of the things that Lea Winerman mentioned earlier. We've had a new models discussion for a number of years now in the science center strands here. One of the themes that has come out of this is to let the visitor, guest, or user have more of a voice so it's not always us just presenting science. I like the idea that you can post questions to the scientists and have the scientists respond. I would keep looking at how we can break down the barriers to the public, who end up just being passive recipients, by using the Web to let them participate in the discussion in a way that we haven't really fostered at our centers or PBS."*
- *"Don't be afraid of redundancy, like if there's not just one interactive that encompasses your article or interview, but different interactives or different animations or interviews that get at different parts of the process. If a child's more interested in how you grind up the weed to make the ethanol, for example, maybe there's a flash animation of the actual process. At the Field Museum [Chicago, IL] we have expeditions that field as our Web site where you can actually actively update any archeological excavations or biological inventories or other ecological work.*

We also have film segments in our institution where you can kind of interrupt the researcher in his office. He turns around and starts talking to you about what he's working on that day or what she's doing in the lab, making you feel like it's more of a conversation, that you are an experimenter as well. You're learning about what they're doing while you're in a physical space where you can do the work as well. The museum is trying to get you to turn into a mini-researcher yourself. And, you have an expert there to have a conversation with, which makes the Web site more accessible for all levels from novice all the way up to the university student who wants to engage at a deeper level."

When asked how they and their institution would use *The NewsHour's* science resources (e.g., streaming video, audio Podcasts, program transcripts, etc.), one respondent explained that "one thing we're trying to do is bring in voice about how scientists became scientists." In support of this view, another respondent said: "I absolutely support the idea of talking about science from the perspective of where scientists come from and how they do their work." Accomplishing this task, however, is a challenge, as pointed out by one respondent who noted: "For us, finding the scientists and developing the video is very time consuming, whereas you're already interviewing these scientists. It would be very helpful for us if you could take five more minutes to ask a couple of questions and then put that clip on your Web site as an inspiration." Another respondent indicated that "…one of the things I'm trying to do is get visitors to our museum to also visit our Web site. I like them to see our Web site as a content provider and as a place to stay for awhile, as opposed to putting a lot of links on there and driving them to other Web sites, including yours." She went on to ask "Is there a way that your stories could be provided not as a link, but put directly on our Web site as a resource, with your permission and proper credit of course?"

- *"A lot of the information that's out there right now is about educating people and part of our mission is not just educating people, but also inspiring people. So, one thing we're trying to do is bring in voice about how scientists became scientists. We're thinking about putting in kiosks containing interviews with scientists explaining what they did when they were kids, how did they get to be scientists, and what are they doing now. For us, finding the scientists and developing the video is very time consuming, whereas you're already interviewing these scientists. It would be very helpful for us if you could take five more minutes to ask a couple of questions and then put that clip on your Web site as an inspiration."*
- *"From a youth program perspective, I absolutely support the idea of talking about science from the perspective of where scientists come from and how they do their work. Students in general have a perception that science is beyond them and you have to be brainy and a special person and they don't necessarily see themselves there. Also, in terms of a topic, a lot of people are equating the current state of affairs in the United States specifically to the time of Sputnik in terms of the need for a focus on breaking down these student perceptions and getting more kids interested in science. In most science disciplines the rate of growth and employment far exceeds the annual rate of degrees that we're handing out. Highlight that there's an opportunity and that they can do it."*
- *"Obviously you want to drive traffic to your Web site and you're providing great content and great services, but one of the things I'm trying to do is get visitors to our museum to also visit our Web site. I like them to see our Web site as a content provider and as a place to stay for awhile, as opposed to putting a lot of links on there and driving them to other Web sites, including yours. Is there a way that your stories could be provided not as a link, but put directly on our Web site as a resource, with your permission and proper credit of course? With a traveling exhibit, for example, when somebody hits that topic on my Web site it would be great to say here's a related story that's already been produced by this reputable source."*

Focus group participants were asked if there are key science topics that they think are of interest to the public. Rather than listing topics, concern was expressed that stories are not often being viewed through the lens of science. One respondent, for example, said: "It would be nice to get a balanced story that was about the science." Another recommended: "Make the scientific process more apparent in how you present the science. Making it overt that these are observations would be very useful in a lot of contexts." Similarly, a respondent remarked: "I

think having a focus on the science process itself would be enlightening for a lot of people. It's not easy for us to demonstrate." Another added: "We have to generate those inclusive, connective pictures in perspective because in many respects the science community doesn't do it."

- *"Yeah, the idea that evolution is not just a theory. It would be nice to get a balanced story that was about the science."*
- *"Mindful of the needs for both families and the public in general, make the scientific process more apparent in how you present the science. Making it overt that these are observations would be very useful in a lot of contexts."*
- *"I think having a focus on the science process itself would be enlightening for a lot of people. It's not easy for us to demonstrate."*
- *"I think everybody is involved in nanotechnology and it's such a sticky topic in terms of getting really, really good graphics. Once you're down at the nanoscale it's fine, but it's that conceptual leap and every single analogy and metaphor that I've heard is somewhat lame. It would be great to do it graphically instead."*
- *"Regarding nanotechnology, I think we have to be very careful not to get semantically caught up in buzz. Nano is chemistry and physics, just from different perspectives. So I think nanotechnology is nothing new. It's just different. New tools make different things happen. So, I think we have a job to connect that so people understand that this is just another view and variant of chemistry or of physics or of biology rather than thinking that this is a whole new field that we've got to squeeze into the curriculum. We have to generate those inclusive, connective pictures in perspective because in many respects the science community doesn't do it. They're as ultra-myopic as anybody out there. I like to say that the most scientifically illiterate people I know are scientists because they only know their field. I come from that community, so I can say it."*

Searching for ways to meet audience needs and to build partnerships between *The NewsHour* and science centers/museums, focus group participants were asked if there are resources, they don't currently have, that this project could provide to help draw visitors to their institutions. A request was made by one respondent for this project to help them identify individuals who are able to help put a program together that uses *Science Unit* materials. Another respondent remarked: "You can be the diplomatic bridge builder who can bring in other outside colleagues who can partner with us on things actually at the museum itself." One respondent reported that "…it would be great if we all had *NewsHour* programs that we could plug into our schedule." An administrator from a suburban science center commented: "We're looking for ten-minute segments that are more applicable to families [second through fourth grade level]."

- *"Are there individuals that you know of from all the work you've done, and who are local enough, that would help us put a program together that uses your materials?"*
- *"We present a lot of lecture series. If you have put together a new segment with scholars from across the country, the scholars who are most geographically relevant and the one's who are interviewed in the question-and-answer session have actually come to participate in the activities at our institution. So, you can be the diplomatic bridge builder who can bring in other outside colleagues who can partner with us on things actually at the museum itself."*
- *"What you are doing now with this focus group is really great. Two-way communication is very important. If there are things like your video clips that we can add to our content in the museum that would be very helpful. So, having a dialog about what we're developing and what you can add to that from what you've already done or stories you are currently working on would be a great help. We want to keep that dialog flowing between us."*
- *"We have a lot of families in Burlington, Vermont who come to our particular location and we're looking for ten-minute segments that are more applicable to families. That are second through fourth grade level. We would love to have some sort of segment about science news. I would love to be able to plug in some of the information from your in-depth reports in a family friendly manner on a daily basis. They're not going to sit there and listen to one of these other kinds of*

video streams. But if there's a short segment that's kind of kid friendly news that would be awesome."

- *"We have different programs during the day, but it would be great if we all had NewsHour programs that we could plug into our schedule."*
- *"If you think about our business, like your business, we both want to drive people to our Web sites. Probably more important, we want to drive people to our building. We need to identify programs or resources that would accompany the segments to entice people to come to our institution?"*

Asked whether or not it would be useful for *The NewsHour* to contact the local science center/museum in an area were its production team plans to film interviews with scientists/researchers and other newsmakers, there was unanimous agreement that this would be useful for both parties. One respondent to this inquiry, for example, remarked: "You would have a great PR partner to draw more traffic and more visits to your Web site and to your broadcasts." Another speculated: "At some point there could be twenty institutions who could participate in this event simultaneously."

- *"You would have a great PR partner to draw more traffic and more visits to your Web site and to your broadcasts."*
- *"Moving toward Web 2.0, can you offer some sort of Web chat with experts who work with you? At some point there could be twenty institutions who could participate in this event simultaneously. People would come to our science centers to participate rather than our offering a link to another Web site or watching a program on PBS."*

Focus group participants were asked to describe the most useful thing that this project could do next. Responses included requests for "shorter, more rapid response segments;" "partners for film production;" "a prototype partnership to work on several different ideas would be ideal;" "adaptability of the content [shorten segments to two minutes and allow them to be plugged into science center Web sites];" "more in-depth content;" "[make segments] transferable to our Web site;" "We're always looking for partners for film production;" "I have a Web site and an outreach program that I could plug this into tomorrow;" "…we would make use of your materials and services very quickly;" and "We might actually use your film work in the exhibit spaces themselves in the gallery. That's when we would need a more strategic partnership on planning." Several people simultaneously concurred with each of these remarks as they were being spoken, especially the last one.

- *"If you could find a way to create a subdivision that produced shorter, more rapid response segments. Like most museum institutions, you spend so much time planning the content and the physical design of the space, the media development gets pushed to the end. So we're always looking for partners for film production, especially economical partners. It's an incredibly stressful process. If we had another supplier out there who we could work with really quickly and fit into their schedule you would get tons of business."*
- *"I think a prototype partnership to work on several different ideas would be ideal."*
- *"Having the adaptability of the content is really important because I have a Web site and an outreach program that I could plug this into tomorrow. I would lose people very rapidly, however, in its current format of ten minutes. For the physical space in the museum two minutes is the maximum. In contrast, our Web users are looking for more in-depth content."*
- *"If the content you already have were transferable to our Web site, as opposed to just a link, we would make use of your materials and services very quickly. If it's on our Web site they may sit there and watch entire segments."*
- *"We might actually use your film work in the exhibit spaces themselves in the gallery. That's when we would need a more strategic partnership on planning*."

As a follow-up question, participants who expressed the need for shorter video segments were asked if they would need *The NewsHour* to edit the segments or if they just need the permission to edit segments themselves. This inquiry produced three key ideas. First, "If we collaborated early in the schedule on content development, outlines, and concepts and then

worked with you creatively to shape a program suitable to our communication needs, then you could be the media vendor creating our product for us." Second, "[If] it's later in the schedule and you already have a show on a topic, such as ethanol, then you could provide us with a 2-minute version and a 10-minute version for use in our gallery as a price by package option." Third, "On KQED's Quest site [San Francisco, CA] they have code that you can use to embed it into your own Web page."

- *"It depends on how much creative influence you want. If we collaborated early in the schedule on content development, outlines, and concepts and then worked with you creatively to shape a program suitable to our communication needs, then you could be the media vendor creating our product for us. Or, maybe it's later in the schedule and you already have a show on a topic, such as ethanol, then you could provide us with a 2-minute version and a 10-minute version for use in our gallery as a price by package option. Product flexibility would be helpful."*
- *"I just had a technical thought about a way to make your materials available to other people, especially science center Web sites. On KQED's Quest site (San Francisco, CA) they have code that you can use to embed it into your own Web page, if your doing a blog, for example. That would make sharing very simple."*

These ideas generated the following questions from focus group respondents:

- *"Would it make sense for us to send you guys information about what we're doing right now and how we've done things in the past?"*
- *"Are the videos on the site downloadable or do you have to be on the site to watch them? I do a lot of outreach to places where dialup connections are the best you can find, if your lucky. So having them be downloadable would be helpful."*

Asked for any additional suggestions that would improve the *Science Unit*, two recommendations emerged. First, "A museum's point person will help you form partnerships and open you up to all of the museum's resources." Second, "I think the format and seriousness of your news program and the grammar of a TV news correspondent should be retained… So even if it's cut down to two minutes, I think it should still retain some of the delivery mechanisms that news programs have… You have something very special. So don't get rid of too much."

- *"Just one minor tip. A lot of institutions have targeted PR point persons for specifics related to collections and research. For example, we have a PR individual at the Field Museum [Chicago, IL] who just handles the press related to the academic side of the building. A museum's point person will help you form partnerships and open you up to all of the museum's resources. So, I suggest seeking out those collaborators at all the different institutions."*
- *"I know that all of us have been saying make it shorter and tell us six weeks in advance, but also I think the format and seriousness of your news program and the grammar of a TV news correspondent should be retained. I'm sure you're not going to get rid of your brand as you give us this content, but that does give it a different approach than we take and a different gravitas. So even if it's cut down to two minutes, I think it should still retain some of the delivery mechanisms that news programs have. That would make it different for us because we have a lot of content suppliers always telling us to take their content, but you have something very special. So don't get rid of too much."*

When focus group participants were asked if they would recommend *The NewsHour's Science Unit* to others, there was unanimous agreement that they would. This finding is corroborated by responses to a similar question contained in the written questionnaire discussed in the next section of this report.

Questionnaire Feedback

Findings and quoted remarks presented below were obtained from written responses to a post-presentation questionnaire.

Overall Rating of The NewsHour's Science Unit. On average, the twenty focus group participants who responded to the post-presentation questionnaire gave *The NewsHour's Science Unit* an overall rating of 4.45 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). As shown in Table 8, below, questionnaire respondents rated the *Science Unit* as either "Very Good" (45%) or "Good" (55%).

Table 8. Overall Rating of The NewsHour's Science Unit

Variable	*N*	*Categories*	*Responses* Number (%)	*Mean Rating*
Overall Rating	20	Very Good	9 (45.0%)	
		Good	11 (55.0%)	**4.45**
		Average	–	
		Poor	–	
		Very Poor	–	

As a follow-up question, respondents were asked to describe their overall reactions to the *Science Unit*. Responses to this inquiry all convey positive perceptions.

- *"Could provide supplementary information for your excellent existing program content."*
- *"Glad to hear about it. Welcome partnerships."*
- *"Glad it's a resource."*
- *"Enjoyed it very much!"*
- *"Very good for educating people. There needs to be more said about science process and inspiration."*
- *"Positive. You are a respected, trusted source."*
- *"Quite positive. I'm willing to examine it further and learn more."*
- *"I wasn't aware of what you are doing. I'm delighted about what you are doing."*
- *"A real opportunity for us to access content."*
- *"Very positive."*
- *"Glad to see it and know that it exists."*
- *"Unusually in-depth."*
- *"Great news. Great presentation format for an online science news resource. Great for display and use within exhibits, but segments may need to be shorter."*
- *"Excellent source for in-depth coverage of science news."*

Most and Least Liked Aspects of the Science Unit. Asked to describe the aspects of the *Science Unit* that they like the most, respondents offered a broad range of positive responses. Note that five of the following remarks (25%) focus on exploring partnership opportunities between *The NewsHour* and science centers/museums:

- *"Opportunity to dialogue about future collaborations."*
- *"Your willingness to work as a partnership and be flexible."*
- *"The potential for partnership."*
- *"Opening avenues of collaboration."*
- *"Building a bridge between us."*
- *"On-demand content available on the Web site."*
- *"Solid Material."*
- *"Well designed Web site."*
- *"The interactives. The many subject areas."*
- *"Diverse approaches and timely topics."*
- *"Teacher materials."*
- *"That there is content we can use for free."*
- *"The thoroughness and the different facets (text, video, interactives)."*

- *"Interactivity. In-depth nature of coverage."*
- *"Content – especially on Web site."*
- *"Accessible."*
- *"Quality of in-depth story, Web site, and teacher materials."*
- *"Pace and interest, breadth and depth."*
- *"Narrative style. Presentation of videos."*
- *"Educational value."*

When asked to describe what they like least about the features that Lea Winerman presented (i.e., a presentation of the *Online NewsHour* Web site and viewing a 10-minute video segment about alternative fuel research/technology) three of the nine responses received indicated that ten minutes is too long for showing video segments in a museum setting.

- *"Duration of segments is long in a museum setting."*
- *"Ten minutes is tool long for gallery use."*
- *"Segments should be no more than about two minutes."*
- *"It seems like your site attempts to have links to resources for every topic – which is great – but it seems that very soon your site will be saturated with so much information that it's overwhelming."*
- *"Don't interview "opposition" subjects who make bad arguments. For example, he's only doing it for the funding. The ethanol segment is too long and didactic."*
- *"Fairly traditional."*
- *"Traditional – white, older male reporter. Standard format."*
- *"A sense of obligation to balance pro/con issues."*
- *"Unsure how we can integrate films into our existing Web site and exhibit products without curatorial input from the beginning."*

Agreement/Disagreement With Statements About the Science Unit. Participants were asked to rate their agreement or disagreement with the statements shown in Table 9 using a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Note that, on average, all of the statements received high agreement ratings. The two statements that respondents agreed with most are: (1) *The NewsHour* broadcast reports on science are informative; and (2) Overall, I think the *Science Unit* is a useful educational resource.

Table 9. Rating Agreement/Disagreement With Statements (N=20)

	Rating					
Statement	*1*	*2*	*3*	*4*	*5*	*Average*
The NewsHour broadcast reports on science are informative.	–	–	–	9	11	*4.55*
The report we viewed is effective in communicating science content.	–	–	4	12	4	*4.00*
The science report we viewed motivated me to learn more about the topic.	–	–	8	10	2	*3.70*
Online NewsHour is a useful resource for science information/concepts.	–	–	1	14	5	*4.20*
Online NewsHour provides features that are easy to use.	–	–	4	11	5	*4.05*
Viewing science reports via online streaming video is a valuable feature.	–	–	2	9	9	*4.35*
Listening to audio Podcasts of science reports is a valuable feature.	–	–	2	8	10	*4.40*
Access to transcripts of science reports is a valuable feature.	–	–	5	9	6	*4.05*
Teacher lesson plans are helpful.	–	1	5	7	7	*4.00*
I would like to receive RSS feeds from *The NewsHour*.	–	1	13	4	2	*3.35*
I will use *Online NewsHour* as an educational resource.	–	–	–	14	6	*4.30*
I will recommend *Online NewsHour* to others.	–	–	–	13	7	*4.35*
I will recommend *The NewsHour* broadcasts to others.	–	–	3	8	9	*4.30*
Overall, I think the *Science Unit* is a useful educational resource.	–	–	–	9	11	*4.55*

Key Objectives That Should Be Met by the Science Unit. Focus group participants were asked to specify key objectives that they think should be met by *The NewsHour's Science Unit*. The following are their broad ranging recommendations:

- *"General science education."*
- *"Unbiased reporting. Don't use emotions (fear). Don't use controversy. Don't use trigger words."*
- *"Shorter, more family oriented features. Interviews of scientists about their inspiration. Geographic and ethnic diversity. Something that communicates that science is a long process, not just sensational experts who make things happen overnight. Information about neuroscience and neuro-ethics."*
- *"Two-minute segments."*
- *"Provide footage for museum/museum educator use. Linkage to our/your Web site."*
- *"Shorter, adaptable pieces."*
- *"Find a way for us to transfer clips to our museum Web site. I want clips for my Web site. I can use 2-minute versions in gallery exhibits. A DVD with a dozen 2-minute clips would easily be the basis for a kiosk. Very quick turnaround."*
- *"In-depth explanations of topics – could lead to powerful discussions in our center after viewing/learning content."*
- *"Information on topics beyond headlines would help the public understand the process of science, how positions are taken with the most current data, and how new data may change that position."*
- *"Emphasis on why the story is important."*
- *"Decide how much collaboration and content input you want from museums. Museums may not purchase or use if they don't have final approval of scientists and theories featured."*

What Materials or Activities Could Be Developed Jointly? When asked to describe "turnkey" materials (e.g., video, Web resources, curricula, etc.) or shared activities (e.g., Boston Form and other public events) that *The NewsHour* might develop in partnership with participants' institutions, they offered the following ideas:

- *"Current science content."*
- *"Curricula, Web resources, video."*
- *"Downloadable material."*
- *"Yes!!! All of these materials and activities."*
- *"Video and other content information, like interactives."*
- *"Video and Web resources."*
- *"Help us obtain live "talent" to combine with your content for onsite presentations. Host Web chats linked to museum sites."*
- *"Public lectures for adults to explain, in a non-political way, current topics in science."*
- *"Video and shared activities/events."*
- *"Taking your resources and having models."*
- *"Needs exploration."*
- "Stories on science fairs/projects by kids, etc. Also stories on citizen science programs and activities."
- *"Live press conferences at museum, film interviews in museum, feature museum research, feature collections of museum, link to our Web site and our researchers."*
- "Don't forget all of us small museums. We really need current science news and experts, even it's in a box."

Nancy Van Beek (Kirby Science Discovery Center) offered the following thoughts:

What I could put into current and future science center areas:

A. *A kiosk CD with 10-20 1-3 minute clips of current science news. This kiosk would be in areas where caregivers are with their children (e.g., KNEX Exhibit, Lobby, Classroom, waiting areas) as well as in content specific areas. NASA Brain Bites is a kiddy version of what we are looking for.*
B. *Interactives on a kiosk CD. Our patrons love connecting themselves to research.*
C. *Provide teachers with knowledge they don't have access to. Breaking news in nanotechnology.*
D. *Summer internships for teachers at the MacNeil/Lehrer NewsHour. Science for communication. Applications on our Web site and sent to our teachers.*

We don't have any direct online exhibits for the general public, but we can download information at night to update materials.

Probing further, participants were asked to identify the types of institutions, networks, etc. their science centers/museums partner with. The following remarks indicate that a large majority of the partnerships are formed with local entities:

- *"Research institutions, scientists, the journal Nature."*
- *"EROS (National Center for Earth Resources Observation and Science). SDSU (South Dakota State University). National Music Museum (The University of South Dakota). Hematech Inc. (Sioux Falls, SD). Daktronics (Brookings, SD). POET (Sioux Falls, SD).*
- *"Universities, local schools, and museums."*
- *"WDEV (Radio Vermont)."*
- *"It varies."*
- *"Many."*
- *"Asia Pacific Network of Science-Technology Centers. Australian and New Zealand Science and Technology Education Network."*
- *"Other organizations involved in environmental concerns. Children's science organizations. Academic institutions."*
- *"University of Maryland (College Park, MD). Morgan State University (Baltimore, MD). Johns Hopkins University (Baltimore, MD). ScienCentral News. All four broadcast affiliates (NBC, ABC, CBS, FOX) use us as background."*
- *"PBS."*
- *"Ohio State University and our local PBS station. We have the only embedded PBS station within a science center. We're still exploring potential of forming other partnerships."*
- *"Universities and an educational testing service in our region."*
- *"National Geographic and DNR (Department of Natural Resources)."*

Spreading the Word About the Science Unit. When asked to describe what they would do, in anything, to spread the word about *The NewsHour's Science Unit*, eleven respondents expressed the following thoughts:

- *"I'll tell people about it."*
- *"Staff and teachers."*
- *"Local public relations and our Web site."*
- *"Talk to other exhibit and program developers."*
- *"E-mail to colleagues. Links from Web sites."*
- *"I could publicize information in my quarterly newsletter. I could mass e-mail a list of about 8,000 people."*
- *"Share with staff. Use portions of programs in our update centers. Develop teacher awareness sessions."*
- *"Link from our sties."*
- *"Share internally. Looking for ways to create links from our site to yours on themes."*
- *"Needs exploration."*
- *"PR materials, Web links, etc."*

Recommendations for Science Experts. It was explained to the focus group that this project is looking for science experts who can provide either on-camera or off-camera expertise. Asked for their recommendations, respondents offered the following comments:

- *"Include access to Canadian and/or international scientists/content rather than strictly American."*
- *"David Orr from Oberlin College regarding environmental education."*
- *"EROS (Jon Christopherson, Kevin Gallo, Lee Magnus). SDSU (contact Tim Nickles).*
- *"Every institute of higher learning has them [science experts].*
- *"Our university has a few!"*
- *"University faculty."*
- *"Utilize existing links that science centers have, both through staff and with their own relationships with research institutions."*
- *"Look for researchers who can discuss <u>how</u> they came to conclusions. Publicize the <u>process</u> of science. Don't just publicize the "discovered" fact."*
- *"In addition to this, the notion of taking the story to science centers and interviewing folks there could be very powerful."*
- *"Every major university has several really good people. For example, Mario Capecchi (Human Genetics) at the University of Utah."*
- *"A number of science centers are building stronger relationships with researchers."*
- *"Contact Tom Rieland, General Manager for WOSU Public Media (the local PBS station which is partnered with us as the only PBS station integrated with a science center in the U.S) at COSI [Center Of Science and Industry – Columbus, OH] if you would like to explore with us how our particularly special relationships might help you test/develop opportunities."*
- *"Increasingly, science center have savvy communicators for science-and-society issues."*
- *"Our museum houses a large staff of researchers who actively perform, publish, and discuss lab work. It would be very easy to identify experts from our museum."*
- "See the science process exhibit (Wonders of Science) at the Koshland Science Museum in Washington, DC."

Additional Remarks. The following thoughts were included with one of the completed questionnaires:

> "We are a small science center (100,000 visitors per year). There are several of us out there. We can't do the editing of the broadcast. We can't afford to have experts on staff. We need and desire current science information for our patrons. You have the potential to provide this. We want the kids to see the potential in themselves. Kids love outtakes, goof-up clips, and humorous situations the very formal scientists get into, such as when scientist in your ethanol segment tried to climb a tree. Scientists then seem more human, more like mom and dad. Eighty percent of all children will achieve their parent's education level.
>
> I don't have any data to prove it, but I think the more human the people are the more kids go "Wow, he isn't any different than me!" A doctor's kid knows his dad can't fix the plumbing, dance, or program the VCR. A McDonald's hamburger flipper's kid knows his dad can fix the car and change the oil, but doesn't know that it's his dad's choices that led him to his job not his dad's intelligence (usually). The best example is the kid who saw the science "expert" not figure out how to do the microwave in the lab and said "Even I can do that." Later discussion showed his new opinion of his future. He thought he might be a meteorologist. It couldn't be too hard after all. He is currently enrolled in a college engineering program."

Interest in Further Communication. Focus group participants were asked if they would like to receive e-mail alerts about upcoming science broadcasts. They were also asked if they would like to participate in further *NewsHour* development or research. A total of 15 participants answered in the affirmative to both questions and provided the following contact information:

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Appendix

Summary of Key Ideas That Emerged From the ASTC Focus Group Study

Science news Coverage in general and dissemination of scientific information

- Participants expressed concern that controversy is frequently used to foster interest in a science story.
- "Another problem with the current media is that science is always presented as having two sides, regardless of whether or not the two sides are equally valid. Cover the valid side of the issue as opposed to having two sides just for the sake of having two sides. Be good scientists rather than worrying about being politically correct."
- Members of the group were concerned that the "expert" selected might be used to fit a particular point of view the program wants to convey or have hidden agendas of their own. For example, one participant said, "We see things on commercial news shows that are clearly commercials, but they're presented as though they are a news story by saying that science has discovered this new drug for X and that's all you get. It's clearly coming right from the pharmaceutical company."
- A participant suggested science reports should make it known that they will do another story as more data comes in because "…we often present science as having a fixed understanding, so when we change our understanding we lose a lot of credibility with the public."
- Participants discussed how there is a large amount of scientific information on the Internet, but its comprehensibility and quality of coverage remain problematic.

Objectives and goals for a science news program

- It is important to define the content to the project's partners.
- It is important to help people understand the data collection process and where we are in the process of understanding a particular issue or field of science. The public needs to understand what is known today and what additional research needs to be conducted.
- "We often present science as having a fixed understanding, so when we change our understanding we lose a lot of credibility with the public. The science ideas we covey have a perceived bias, so when people present unsubstantiated positions the public doesn't know how to sort that out. So I think when you're doing a story, what I'd like to hook onto is an understanding of the data collection process."

Challenges for a science news program

- Meeting the needs of multiple audiences in different contexts is a challenge.
- Science buried in text is a lot less attractive to people, therefore video and strong graphics are essential to the success of a story.
- Struggle for a balanced story about the sciences – "Make the scientific process more apparent in how you present the science. Making it overt that these are observations that would be very useful in a lot of contexts."

Curriculum standards

- "The issue is identifying where a resource fits within the curriculum, not if it meets the standards."
- "We are informal science. We're beyond the curricula. We're beyond the school. And although we're constantly being seduced into feeding the curricula, that's really not the major mission. We're about motivation, interest, and expansion. So I think it's important to have curricular ties, but I don't think we want to overplay it."

Length of segments

- There was unanimous agreement that ten-minute segments have educational value, but is too long for use at a science center. Two-minutes is the "drop-off point" for visitor attention/interaction.
- "We need a more flexible format to show what's appropriate for the content of that moment and the context of where the video is located in the science center."

Internet component

- In order to meet a broad range of educational needs, participants valued the two-way communication enabled by the Internet.
- One participant thought it would be beneficial to allow users to post questions to scientists and have the scientist respond.
- "I would keep looking at how we can break down the barriers to the public, who ends up just being passive recipients, by using the Web to let them participate in the discussion in a way that we haven't really fostered at our centers or PBS."
- Having an expert there makes the Web site accessible for all levels from novice to university level.

Changes/improvements for this project

- "Shorter, more rapid response segments."
- A prototype partnership to work on several different ideas.
- Adaptability of content (shorten to two minutes and allow them to be plugged into science center Web sites).
- Provide more in-depth content.
- Partner with science centers for film production.
- "More strategic partnership on planning."
- Make videos on the site downloadable – Many times dial-up connections are the best you can find, so having the videos be downloadable would be helpful.

In order to create shorter segments, would they need *The NewsHour* to edit segments or just need permission to edit themselves?

- "It depends on how much creative influence you want. If we collaborated early in the schedule on content development, outlines, and concepts and then worked with you creatively to shape a program suitable to our communication needs, then you could be the media vendor creating our product for us."
- A 2-minute version and a 10-minute version can be created for use in the galleries as a price by package option. "Product flexibility would be helpful."

Partnership with science centers/museums

- Keep the science centers well informed – Participants expressed the desire to be kept informed of upcoming programming so that the science centers can plan and package the video segments with other exhibit elements and activities with the theme of the shows in mind.
- A partnership would be beneficial to both sides – "Many of us are trying to tie in a lot stronger with universities and their research and you might find that we can be working with people and topics that you might find of benefit."
    - ◊ Science centers have access to interview subjects.
    - ◊ Link each other's Web site – Sandy Welch (National Science Foundation) "I think there are new tools on the internet that science centers are starting to use that could really connect with some of the tools that you [*NewsHour*] are going to be producing. The local/national connection is so important."
- How Centers plan to use The NewsHour's resources – Respondents liked the idea of a show from the perspective of where scientists come from and how they work.
    - ◊ Use already developed video of interviews in the science centers.
    - ◊ One participant expressed the desire that *The Newshour's* stories could be put directly on their center's Web site instead of a link to the story. This is because they want to facilitate their Web site as a content provider and as a place to stay for awhile.
- Resources this project could provide for science centers/museums:
    - ◊ "…you can be the diplomatic bridge builder who can bring in other outside colleagues who can partner with us on things actually at the museum itself."

- ◊ Video clips that can be added to museum content: “So, having a dialog about what we’re developing and what you can add to that from what you’ve already done or stories you are currently working on would be a great help. We want to keep that dialog flowing between us.”
- ◊ Short, “kid” friendly segments would be easily incorporated.
- ◊ It would be great to have *NewsHour* programs to plug into the center’s schedules.
- ◊ “If you think about our business, like your business, we both want to drive people to our Websites. Probably more important, we want to drive people to our building. We need to identify programs or resources that would accompany the segments to entice people to come to our institution.”

- Should local science centers/museums be called when a production team is in the area to film interviews?
  - ◊ Unanimous agreement that this would be useful to both parties.
  - ◊ “You would have a great PR partner to draw more traffic and more visits to your Website and to your broadcasts.”

Final Suggestions

- “A museum’s point person will help you form partnerships and open you up to all of the museum’s resources. So I suggest seeking out those collaborators at all the different institutions.”
- “I think the format and seriousness of your news program and the grammar of a TV news correspondent should be retained… So even if its cut down to two minutes, I think it should still retain some of the delivery mechanisms that news programs have… You have something very special. So don’t get rid of too much.”

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Field Test and Interview Evaluation of *The NewsHour's Science Reports*

Report for

MacNeil/Lehrer Productions
2700 South Quincy Street
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by

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September 9, 2008

Research Report No. 08090905

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Field Test and Interview Evaluation of

The NewsHour's Science Reports

Executive Summary

September 9, 2008

EVALUATION DESIGN – The findings reported here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. Content of the reports will appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all science reports are archived on the *Online NewsHour* Web site, which includes additional resources such as audio Podcasts, teacher lesson plans, background reports, slideshows, and interactives.

RESEARCH GOALS AND ISSUES – The general purposes for the online field test and interview evaluation discussed in this report are to inform decision making about the content, presentation design, and usability of the project's video segments and Web site. Attention was given to uncovering any obstacles, barriers or unintended positive and/or negative effects that science center/museum administrators and the general *NewsHour* audience think may emerge. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. In addition, attention was given to exploring administrators' interest in building partnerships between *The NewsHour* and science centers/museums. The feedback obtained regarding these issues informs our understanding about the efficacy of *The NewsHour's* science reports for diverse informal science center learning environments and outreach activities. This methodology also provides insights into planned and unplanned outcomes of project implementation.

EVALUATION FINDINGS – The Research procedures, demographic and background variables, and evaluation findings are summarized in the following sections for both the telephone interview and online field test studies.

Telephone Interviews – Findings and quoted remarks presented below were obtained from oral comments offered by science center/museum administrators during follow-up telephone interviews. Broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents actual oral and written remarks are included throughout the report. Readers are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback.

Interview Procedure – Telephone interview research obtained follow-up feedback from science center/museum administrators who participated in a 75-minute focus group session that was conducted on October 15, 2007 at the 2007 ASTC (Association of Science-Technology Centers) Annual Conference in Los Angeles, California. The 15 members of the ASTC focus group who volunteered to provide further feedback constitute the sample for this study.

Interview Demographic & Background Variables – A total of 15 administrators (10 female, 5 male) representing science centers/museums located in 13 U.S. states, Canada, and Australia provided feedback via half-hour telephone interviews regarding the seven key research issues discussed in the findings below.

Interview Findings – Interviewees were asked if they watch *The NewsHour* science reports on PBS (television), online via streaming video, both ways or not at all. Of the fifteen respondents to this inquiry, six have only viewed the reports online, three have only viewed them on television, four have viewed them on both television and online, one viewed them via television and DVD, and two have reportedly been too overwhelmed with work responsibilities to view television or visit sites on the Internet other than occasionally.

Probing further, eight interviewees were asked if they have viewed *The NewsHour* or visited *Online NewsHour* more frequently than they had prior to their participation in the focus group at the ASTC Conference in Los Angeles. A total of six respondents simply said "Yes" and one expressed a more emphatic "Yes. That's a definite yes!" In contrast, one interviewee responded by saying: "The frequency of my visiting *Online NewsHour* hasn't changed," and added: "I was already accessing it often."

As a follow-up question, seven respondents who said they view the broadcast and/or visit the Web site more frequently were asked what role *The NewsHour's* science content played in their decision. The following four themes are representative of their remarks:

- I have an ongoing interest in science content.
- Science related news events increase my interest.
- Being alerted to upcoming science reports would increase my viewing/visits.
- My viewing/visits depend on the science topic.

Since the tenor and broad range of responses to this line of inquiry defies more specific quantification, respondents' remarks are included in the report. For example, David Chesebrough (President and CEO of COSI Science Center and Board Member of ASTC) expressed insights related to the positive value of joining as colleagues and taking a holistic approach to learning by linking daily news events to the science behind them in order to increase engagement and understanding and then motivating the public to translate understanding into action. A transcript of his complete response is contained in the report (Page 5).

When asked whether or not viewing *The NewsHour's* science reports (either on television or online) has increased their knowledge, one respondent said: "I don't feel that I've watched enough of the reports yet to speculate about their impact." The others offered positive remarks, included in the report (Page 6), that are all in the affirmative. Probing for a deeper understanding of the impact the science reports have on learning, eleven interviewees were asked if viewing the reports has led them to look further for more information. All of them said that they have.

Interviewees were asked whether or not viewing *The NewsHour's* science reports (either on television or online) has motivated them to take some form of action and to describe the action if it has. Each of the respondents reportedly have been moved to take action, especially examining the topic further, and offered broad ranging explanations, which are contained in the report (Page 7).

When asked if it is easy to understand the information and implications presented in *The NewsHour's* science reports, there was a consensus of opinion that they are comprehensible and offered additional feedback, included in the report (Page 7), with regards to maintaining the interest/engagement of a young audience (e.g., sixth graders) and meeting the learning needs of both teachers and students at the middle and high school levels.

Asked whether or not *The NewsHour* science reports are balanced, one interviewee responded by saying: "I haven't seen enough of the reports to say whether or not there's a tendency for them to be balanced." There is unanimous agreement among all of the other respondents that the reports are indeed balanced. One respondent did, however, raise the issue of hidden agendas that appear on news programs other than *The NewsHour*. Respondents' perceptions are elaborated on in the report (Page 8).

Interviewees were asked if a *NewsHour* science report has fostered an ah-hah moment when they understood clearly for the first time something they knew before in a partial or confused way. Their responses loosely fall within the following three

categories (*Note that numbers in parenthesis indicate the number of similar responses received.*):

1. Yes. I think so. Probably. Potentially. (5)
2. Not with my extensive science background. (3)
3. I haven't seen enough to make such a judgment. (1)

Transcripts of their full responses are included in the report (Page 9).

Interviewees were asked if their science center/museum has a desire to work with *The NewsHour* science content in the future. Every member of the sample displayed strong interest in the project's components and in ways that they and/or their institutions can both utilize them and collaborate with MacNeil/Lehrer Productions on further development and outreach efforts. However, since the tenor and broad range of responses to this line of inquiry defy further quantification, respondents' written remarks are included in the report (Page 9) to convey the full scope and nature of their thoughts, needs, and intentions.

Online Field Test – Demographic data, findings and quoted remarks presented below were obtained from written responses to an online field test questionnaire

Field Test Procedure – Field test research obtained feedback from individuals who responded to an online questionnaire after reviewing an average of approximately 3 *NewsHour* science reports (Table 9 on Page 16 lists the 37 science reports containing streaming video that field testers selected to review.). Members of *The NewsHour's* general audience who have requested to receive *Science Alerts* via e-mail informing them about upcoming science reports constitute the sample for this study.

Field Test Demographic & Background Variables – A total of 32 field testers (19 female, 13 male) who are representative of *The NewsHour's* television and Internet audiences provided feedback about the program's science reports via an online questionnaire. Their feedback regarding demographic and background variables is summarized below.

Of the 32 field testers who participated in this evaluation research, 68.8% have reportedly earned a graduate or professional degree, 25.0% have a college degree, and 6.3% have completed some college. With regards to their science background, 59.4% reportedly have an occupation related to science and 40.6% do not. Probing further, when asked to briefly describe their occupation, two respondents simply said they were retired. Eleven others offered written descriptions that can be loosely divided into the following five categories (*Note that numbers in parenthesis indicate the number of responses that fall within each category.*):

Education (12)
Computers/Technology (6)
Science/Medicine (4)
Writing/Publishing (4)
Management/Consultant (other than science/technology) (4)

Education and computers/technology are the two most cited career fields, respectively.

Asked how frequently they usually view *The NewsHour with Jim Lehrer*, 77.4% of the respondents reportedly watch the program as often as they can, with another 6.5% indicating they watch it a few times each month and 9.7% watch it a few times each year. Two respondents indicated that they have never seen the program on television, but do view *NewsHour* reports online.

Asked how often they have viewed science reports on *The NewsHour with Jim Lehrer*, 40.6% of the respondents view the reports whenever they are broadcast. A similar percentage have reportedly viewed the reports a few times each month. Another 12.5% indicated having seen them a few times each year. Two respondents

had not viewed broadcast science reports prior to this study, but do reportedly view them online.

Field testers were asked which of the *Online NewsHour* features they have used, if any. The three most frequently cited features are the *Science Reports* main page, the *Online NewsHour* main page, and the *Earth and Environment* section of *Science Reports*, respectively. Probing further, field testers were asked how often they visit the *Science Reports* section of *Online NewsHour*. Of the 32 respondents to this inquiry, 21.9% reported that they visit *Science Reports* a few times each week. An additional 50.0% indicated that they visit the section a few times each month and 15.6% visit it a few times each year. Four respondents said they had not visited the *Online NewsHour: Science Reports* section prior to this study. Field testers were also asked to specify all of the ways they have viewed/heard *The NewsHour's* science reports. Television broadcasts and Web site/streamed videos are the most frequently cited avenues of access, respectively.

Field Test Findings – On average, the 32 field testers (19 female, 13 male) who responded to an online questionnaire after reviewing approximately 3 *NewsHour* science reports gave them an overall rating of 4.72 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). In addition, respondents described the science reports they viewed as either "Very Good" (71.9%) or "Good" (28.1%). Probing further, field testers were asked to describe their overall reactions to *The NewsHour's* science reports. Four of the respondents simply wrote the word "Excellent." Others expressed similarly positive but more elaborate impressions and suggestions (Page 17).

Asked to describe the aspects of the science reports that they like the most, respondents offered a broad range of positive feedback about numerous aspects of their content, topics, relevance, depth, format, clarity, balance, accuracy, credibility, approach to controversy, level of interest, and educational value. Since responses to this line of inquiry defy quantification, respondents' written remarks are included in the report (Page 18) to convey the fullness of their attitudes.

When asked to describe what they like least about the science reports, 7 of the 32 respondents simply wrote the word "Nothing," indicating there is nothing about the reports that they dislike. Four others offered the following similarly positive remarks:

- *"There isn't anything that's not valuable."*
- *"I have no complaints."*
- *"No real problems."*
- *"Do not have any."*

In contrast, others offered broad, multifaceted descriptions and critical perceptions of what they like least about the science reports. Consequently, their written remarks and suggestions, which defy quantification, are included in the report (Page 19).

Online field testers were asked to rate their agreement or disagreement with each of the fifteen statements shown in Table 11 on Page 21 using a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). On average, all of the statements (which are positive statements about the reports, *Online NewsHour* content, and viewer behavior) received high agreement ratings (more than 4.00), except an interest in receiving RSS feeds, which garnered a substantive 3.46 rating, on average. The three statements that respondents agreed with most are: (1) *The NewsHour* broadcast reports on science are informative; (2) I will recommend *The NewsHour* broadcasts to others; and (3) Overall, I think the science reports are a useful educational resource.

Field Test and Interview Evaluation of

The NewsHour's Science Reports

September 9, 2008

Project Description

The findings reported here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. Content of the reports will appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all science reports are archived on the *Online NewsHour* Web site, which includes additional resources such as audio Podcasts, teacher lesson plans, background reports, slideshows, and interactives. Video packages will be archived on the Web site both as complete segments and in discrete digital files available to students to use in multimedia authoring assignments.

Research Goals and Issues

The general purposes for the online field test and interview evaluation discussed in this report are to inform decision making about the content, presentation design, and usability of the project's video segments and Web site. Attention was given to uncovering any obstacles, barriers or unintended positive and/or negative effects that science center/museum administrators and the general *NewsHour* audience think may emerge. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. In addition, attention was given to exploring administrators' interest in building partnerships between *The NewsHour* and science centers/museums. Toward these ends, both descriptive and explanatory findings are reported. This summary of findings contains a depth and breadth of feedback provided by interview and field test participants about current conceptions of *The NewsHour's* science reports.

The researcher (Dr. Arthur Johnson, Director of Edumetrics) looked for patterns in the quantitative and qualitative data specified below. Communication between the evaluator and project staff took place at the outset of research in order to review developments and agree upon specific evaluation issues. Toward these ends, in addition to obtaining demographic and background information, research methods focused on informing our understanding about the following key issues:

Telephone Interviews

1. Do interviewees watch *The NewsHour* science reports on PBS, online via streaming video, both ways, or not at all?
2. Has viewing the science reports, either on television or online, …
   a. increased their knowledge?
   b. led then to look further for more information?
   c. motivated them to take some form of action? If so, what?
3. Is it easy to understand the information and implications presented in the science reports?
4. Would they consider the science reports on *The NewsHour* to be balanced?
5. Has a *NewsHour* science report fostered an ah-hah moment when they understood clearly for the first time something they knew before in a partial or confused way?
6. Have they viewed *NewsHou*r broadcasts or visited *Online NewsHour* more frequently than they had prior to the ASTC Conference in Los Angeles? If so, what role did *The NewsHour's* science content play in their decision?
7. Does their science center/museum have a desire to work with *The NewsHour* science content in the future? If so, how?

Online Field Test

1. How do field testers rate *The NewsHour's* science reports, overall?
2. Which science reports did they select to view online?
3. What do they like most and least about the science reports they viewed?
4. How strongly do they agree or disagree with the following statements?
   - *The NewsHour* science reports are informative.
   - The reports effectively communicate science content.
   - The science reports motivated me to learn more about the topic.
   - *Online NewsHour* is a useful resource for science information and concepts.
   - *Online NewsHour* provides features that are easy to use.
   - Viewing science reports online via streaming video is a valuable feature.
   - *Science Alert* is a useful way to receive information from *The NewsHour*.
   - Listening to audio Podcasts of science reports is a valuable feature.
   - Access to transcripts of science reports is a useful feature.
   - Teacher lesson plans from *For Teachers: NewsHour Extra* are helpful.
   - I would like to receive RSS feeds from *The NewsHour*.
   - I will use *Online NewsHour* as an educational resource.
   - I will recommend *Online NewsHour* to others.
   - I will recommend *The NewsHour* broadcasts to others.
   - Overall, I think *Online NewsHour* is a useful educational resource.
5. What are field testers' overall reactions to *The NewsHour's* science reports?

The feedback obtained regarding these issues informs our understanding about the efficacy of *The NewsHour's* science reports for diverse informal science center learning environments and outreach activities. This methodology also provides insights into planned and unplanned outcomes of project implementation. Such information will be considered by the project's designers and producers along with other data in order to make decisions about the content and format of the project's various broadcast and Web-based components. Research procedures, demographic and background variables, and evaluation findings are reported in the following sections for both the telephone interview and online field test studies.

Telephone Interviews

Findings and quoted remarks presented below were obtained from oral comments offered by science center/museum administrators during follow-up telephone interviews.

Interview Procedure

Telephone interview research obtained follow-up feedback from science center/museum administrators who participated in a 75-minute focus group session that was conducted on October 15, 2007 at the 2007 ASTC (Association of Science-Technology Centers) Annual Conference in Los Angeles, California. The 15 members of the ASTC focus group who volunteered to provide further feedback constitute the sample for this study.

Interview Demographic & Background Variables

A total of 15 administrators (10 female, 5 male) representing 13 science centers/museums provided feedback via half-hour telephone interviews regarding the seven key research issues specified above for this study. Their names, titles, affiliations, and geographical locations are summarized below.

Interviewee Affiliation. Table 1, on the following page, shows that telephone interviewees represent science centers/museums located in 13 U.S. states, Canada, and Australia.

Table 1. Participating U.S. Science Centers/Museums

Institution	*City*	*State/ Country*
COSI Science Center	Columbus	OH
Detroit Science Center	Detroit	MI
ECHO Lake Aquarium and Science Center	Burlington	VT
The Field Museum of Natural History	Chicago	IL
The Franklin Institute	Philadelphia	PA
Kirby Science Discovery Center	Sioux Falls	SD
Liberty Science Center	Jersey City	NJ
Maryland Science Center	Baltimore	MD
Museum of Discovery and Science	Ft. Lauderdale	FL
Museum of Science, Boston	Boston	MA
Ontario Science Centre, Canada	Ontario	CA
Peabody Museum of Natural History, Yale Univ.	New Haven	CT
National Science & Technology Centre, Australia	Kingston	AU
Science Museum of Minnesota	St. Paul	MN
Utah Science Center	Salt Lake City	UT

The 15 interviewees who provided feedback for this study are listed in Table 2 by name, title, and affiliation.

Table 2. Focus Group Participants

Participant	*Title*	*Affiliation*
Joe Andrade	Executive Director	Utah Science Center
Marlene Baranda	Manager of Camps and Scouts	Detroit Science Center
Linda Bowden	Program Coordinator	ECHO Lake Aquarium & Science Center
Kim Cavendish	President and CEO	Museum of Discovery and Science
David Chesebrough	President and CEO	COSI Science Center
Jayatri Das	Senior Exhibit & Program Developer	The Franklin Institute
Laurie Fink	Program Director for Human Biology	Science Museum of Minnesota
Shelley Gustavson	Project Developer	The Field Museum of Natural History
Karen Hager	Assoc. Dir., Events & Public Programs	Ontario Science Centre, Canada
Brenton Honeyman	Manager, Executive Operations	National Sci. & Tech. Centre, Australia
Rosanne Kelly	Community Engagement Coordinator	Kirby Science Discovery Center
Emlyn Koster	President and CEO	Liberty Science Center
M.J. Morse	Mgr., Current Science & Technology	Museum of Science, Boston
Van Reiner	President and CEO	Maryland Science Center
Terri Stern	Curriculum Specialist	Peabody Museum, Yale University

Interview Findings

Research findings reported below resulted from an analysis of oral feedback provided by 15 key science center/museum administrators (10 female, 5 male) via telephone interviews. Every member of the sample displayed strong interest in the project's components and in ways that they and/or their institutions can both utilize them and collaborate with MacNeil/Lehrer Productions on further development and outreach efforts. Note that broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents' actual oral and written remarks are included below. Readers are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback.

Viewing Behavior. Interviewees were asked if they watch *The NewsHour* science reports on PBS (television), online via streaming video, both ways or not at all. Of the fifteen respondents to this inquiry, six have only viewed the reports online, three have only viewed them on television, four have viewed them on both television and online, one viewed reports via television and DVD, and two have reportedly been too overwhelmed with work responsibilities to view television or visit sites on the Internet other than

occasionally. Their actual comments are included below to enable the reader to grasp the fullness of their thoughts:

- "Yes. We were pretty regular watchers of *The News Hour* anyway, prior to the ASTC Conference, but as a result of our meeting with you we feel more closely connected to it. I view the reports primarily on television." *(Joseph Andrade)*
- "I watch the science reports online and I've watched them on a DVD that I received from MacNeil/Lehrer. I rarely watch television. I'm really busy and just don't have the time. Anything that I need to catch up on I just get online and get it from there. I do all my research online." *(Marlene Baranda)*
- "I've viewed *The NewsHour* both on television and online." *(Linda Bowden)*
- "I'm not much of a television watcher due to demands on my time, so I'm not very helpful. I haven't regularly been watching *The NewsHour* or visiting the Web site." *(Kim Cavendish)*
- "Yes I do watch the reports on television, but I have a group of staff who are working on what's currently going on in the world of science so I've entrusted them with that responsibility." *(David Chesebrough)*
- "Online because I don't watch very much television." *(Jayatri Das)*
- "Yes. I've been watching *The NewsHour* reports mostly by streaming video." *(Laurie Fink)*
- "I watch *The NewsHour* regularly, but I haven't seen many science reports." *(Shelly Gustavson)*
- "Both on PBS and online via streaming video when I have the time." *(Karen Hager)*
- "Our Manager of Education and Research has watched it both online and on television." *(Brenton Honeyman)*
- "Mostly online via streaming video." *(Rosanne Kelly)*
- "I am such a seldom TV watcher and I'm not very regimented about what I watch, so I've only watched them online. That dialogue you had at ASTC in Los Angeles was a very important one to have with the science center field. You showed your Web site so well at ASTC. *(Emlyn Koster)*
- "I have been absolutely swamped with responsibilities associated with a huge restructuring, so I haven't had time to view television or your Web site as much as I'd like to." *(M.J. Morse)*
- "Yes, I view *The NewsHour* almost every day. It's my primary source for news and informative interviews. I don't have the ability to TiVo the program, so if I miss a broadcast I view it online. I frequently visit *Online NewsHour* for information and I've watched a couple of the science reports online." *(Van Reiner)*
- "Yes. The program under which I work here at Yale Peabody Museum is grant specific and right now what I have been doing is only working with this very narrow focus working with vector born disease and creating curriculum and preparing a teacher workshop. It's been a frantic year on a work, professional, and personal level, so truthfully I haven't been watching television at all. But the reports I've seen online have been very meaningful. They would be very useful for students, especially." *(Terri Stern)*

Probing further, eight interviewees were asked if they have viewed *The NewsHour* or visited *Online NewsHour* more frequently than they had prior to their participation in the focus group session at the ASTC Conference in Los Angeles. A total of six respondents simply said "Yes" and one expressed a more emphatic "Yes. That's a definite yes!" In contrast, one interviewee responded by saying: "The frequency of my visiting *Online NewsHour* hasn't changed," and added: "I was already accessing it often."

As a follow-up question, seven respondents who said they view the broadcast and/or visit the Web site more frequently were asked what role *The NewsHour's* science content played in their decision. The following four themes are representative of their remarks:

- I have an ongoing interest in science content.
- Science related news events increase my interest.
- Being alerted to upcoming science reports would increase my viewing/visits.
- My viewing/visits depend on the science topic.

Since the tenor and broad range of responses to this line of inquiry defies more specific quantification, six of the respondents' remarks are included below:

- "I view *The NewsHour* primarily for its science content because that's what I'm interested in." *(Marlene Baranda)*
- "I view it particularly when there has been some sort of news event that has happened. It will make me go to *The NewsHour* to follow-up on the whole story rather than just a bit and piece that I'll hear on the radio or read about in the newspaper." *(Linda Bowden)*
- "Science news and information is what would strongly motivate me to view *The NewsHour*." *(Jayatri Das)*
- "If I was alerted to current and upcoming online reports I'm sure I would use it much more often." *(Shelly Gustavson)*
- "My viewing would depend on the subject of a science report and knowing when it would be broadcast or available for viewing online." *(Karen Hager)*
- "I am a scientist by education and I look at *NewsHour's* science reports with respect that they got the facts right and they did a very good job." *(Van Reiner)*

The seventh respondent (David Chesebrough, President and CEO of COSI Science Center and Board Member of ASTC) expressed the following insights related to the positive value of joining as colleagues and taking a holistic approach to learning by linking daily news events to the science behind them in order to increase engagement and understanding and then motivating the public to translate understanding into action. The following is a transcript of his complete response:

- "I think we're doing a disservice to the public by isolating the worlds of science and other types of news and information. One can't make an intelligent societal decision for most of the issues we're dealing with without some understanding of the underlying science or math, whether it's global warming or the dynamics around gas prices or deregulation of power companies. There's so much that we're struggling with as a nation because people don't have the underlying science content. I think if we come at it as science, sometimes people might turn off a discussion because that's not something that they're motivated to be interested in.

  I think potentially we're going to do much better if we try to provide helping linkages between a political issue, for example, and the science behind it. There are a couple of movements afoot that are trying to get this presidential conversation, which has barely touched on anything that is science and technology related, to put these perspectives more to the forefront. So, I would not isolate those issues at all. In fact, I would encourage you to provide more linkages and understanding about a concept or news story and how it relates to a conversation and a decision that this country has to make or changes that we might need to be contemplating. We're living it here at the science center all the time and we're really basically asking ourselves how do we make ourselves relevant.

  Just helping folks understand a science phenomena is nice and it gets engagement going and raises interest, but ASTC, which I'm on the board of, and individual science centers are really trying to raise the bar and challenge ourselves to take engagement and interest into understanding, and then take understanding into action. That's really what we're all trying to lay out and grapple with. I think we have to look at this more and more collectively as the informal learning infrastructure of this country, which by the amount of

time people spend in it far outweighs the amount of time that over a lifetime people spend in the formal structure. So, I'm reinforcing and applauding the work that *The NewsHour* is doing, but I'm also suggesting that we have to join as colleagues in the full endeavor of what you might call free-choice learning or informal learning and to look at this more holistically."

Impact on Knowledge. When asked whether or not viewing *The NewsHour's* science reports (either on television or online) has increased their knowledge, one respondent (Laurie Fink) said: "I don't feel that I've watched enough of the reports yet to speculate about their impact." The others offered the following positive remarks, which are all in the affirmative:

- "I'm a practicing scientist with a wide knowledgebase regarding science subject, but it's certainly very valuable and it has been very important for me." *(Joseph Andrade)*
- "I think they did increase my knowledge." *(Marlene Baranda)*
- "Oh, absolutely! Every time. You guys do the best work. So, yes I would say 100% for that." *(Linda Bowden)*
- "From the ones I've seen, I think they certainly offer up the opportunity to have people see a little bit more of the relevance of what's being done in science labs and research plus have a connection with the real people. We're learning hear that the people stories is one of the powerful aspects of how you engage the public in the areas of science." *(David Chesebrough)*
- "Yes they have." *(Jayatri Das)*
- "Yes, *The NewsHour* reports have increased my knowledge. They're very informative." *(Shelly Gustavson)*
- "Yes." *(Karen Hager)*
- "Yes it has." *(Emlyn Koster)*
- "Well sure. I haven't time to access your programs as often as I would like, but from what I've seen it would help me learn information." *(M.J. Morse)*
- "Oh, absolutely. I think *The NewsHour* is doing a great job of increasing viewers' knowledge." *(Van Reiner)*
- "Yes." *(Terri Stern)*

Impact on Interest in Learning More. Probing for a deeper understanding of the impact the science reports have on learning, eleven interviewees were asked if viewing the reports has led them to look further for more information. All of them said that they have. The following are their actual comments:

- "Always. Sure." *(Joseph Andrade)*
- "Yes they have." *(Marlene Baranda)*
- "Yes, it gives me great ideas for what's current in the news." *(Linda Bowden)*
- "Yes." *(David Chesebrough)*
- "Yes, definitely." *(Jayatri Das)*
- "Yes." *(Laurie Fink)*
- "Yes, they have often led me to research the topic further. They serve as a starting point for more detailed research and to see which experts are featured with regards to a particular topic." *(Shelly Gustavson)*
- "Yes, I've looked further." *(Karen Hager)*
- "Yes. Sure they have." *(M.J. Morse)*
- "Yes they have." *(Van Reiner)*
- "Absolutely. Yes. Most definitely." *(Terri Stern)*

Impact on Motivation to Take Action. Interviewees were asked whether or not viewing *The NewsHour's* science reports (either on television or online) has motivated them to take some form of action and to describe the action if it has. Each of the respondents reportedly have been moved to take action, especially examining the topic further, and offered the following broad ranging explanations:

- "To some extent, yes." *(Joseph Andrade)*
- "Yes, but It really depends on the subject. The reports I've seen have made me wonder and think, and I wanted to know more." *(Marlene Baranda)*
- "Yeah. For me it's a matter of modifying it for programs for the floor [of the science center's exhibit area], which I've done." *(Linda Bowden)*
- "I followed up on a few of them. My biggest challenge is time, being a CEO with so many demands on me. That's why I tend to delegate these things to staff who have a little bit more responsibility in these areas." *(David Chesebrough)*
- "Yes, but It depends on how the report relates to or fits within our programs, activities, and exhibits." *(Jayatri Das)*
- "I've taken a closer look at several topics." *(Laurie Fink)*
- "I've been motivated to examine topics in greater depth and consider their application in a museum setting." *(Shelly Gustavson)*
- "Yes, to learn more about topics covered by the reports." *(Karen Hager)*
- "That's very dependent on your personal style and commitments to action. I, for example, am not very politically active so there's almost nothing that would get me to take action. But I think the program would stimulate others to do that and I've personally been motivated to take a closer look at topics that were covered." *(M.J. Morse)*
- "We're using some of the topics and we're trying here at the science center to incorporate those same subjects into workshops or classroom programs for students who visit us during the school year and also into workshops we hold on Saturday mornings or Wednesday afternoons. They're great additions to the workshops that we conduct." *(Van Reiner)*
- "It was exciting to see and hear your presentation at ASTC. The science reports have definitely sent me to get more information or read a book on a topic that's covered. If you would send me e-mail updates informing me about upcoming reports, then I would make it a point to either follow-up online or make it a point to watch future programs." *(Terri Stern)*

Comprehensibility. When asked if it is easy to understand the information and implications presented in *The NewsHour's* science reports, there was a consensus of opinion that they are comprehensible and offered the following additional feedback with regards to maintaining the interest/engagement of a young audience (e.g., sixth graders) and meeting the learning needs of both teachers and students at the middle and high school levels:

- "Yes. I think it's reasonably well done." *(Joseph Andrade)*
- "Yes it was." *(Marlene Baranda)*
- "Yes it is." *(Linda Bowden)*
- "I think they're relatively easy to understand. My one concern is how to keep teens motivated as they change at around sixth grade. I feel that with the tendencies of our modern kids, the reports tend to be a little bit long and not quite as engaging as I think we need to be if we're going to really pull these kids in. Of course there's always that dichotomy between the fact that I love *The NewsHour* because you actually go into depth on things, but if we're trying to reach into the younger audience, they've got a different style and I think we're all struggling with how to meet both of those worlds.

  I think sometimes the shows go a little bit long and I can see kids moving on before the reports get their full interest and engagement. I would hate to see us sell out to the MTV kind of approach. But actually one of the things we're doing more is turning to our youth and letting them help us design what we're doing because I'm too old to even understand that world. I get a headache watching the modern news flashes, which is why

I'm so much more comfortable with *The NewsHour*. I was an advisor for the St. Paul PBS station with their science shows targeted for middle school. They were auditioning for teen talent and that seems to have been working fairly effectively for them." *(David Chesebrough)*

- "Yes." *(Jayatri Das)*
- "Yes, very easy." *(Laurie Fink)*
- "Yes." *(Shelly Gustavson)*
- "Yes." *(Karen Hager)*
- "Oh yeah. Yes it was." *(M.J. Morse)*
- "Yes." *(Van Reiner)*
- "Yes, the reports I've viewed are engaging, easy to follow, and informative at the same time. Because I work with middle school and high school teachers doing professional development with them, as well as creating curricula that's used in the classroom, I'm always doing that duel listening. One is listening given my own knowledge level and the other is trying to imagine these teachers being able to look at it from their perspective. Is this something they would find useful? Is it something they could use in the classroom? And yeah, they are very, very understandable, very approachable, and not dumbed down." *(Terri Stern)*

Are Science Reports Perceived to Be Balanced? Asked whether or not *The NewsHour* science reports are balanced, David Chesebrough responded by saying: "I haven't seen enough of the reports to say whether or not there's a tendency for them to be balanced." There is unanimous agreement among all of the other respondents, that the reports are indeed balanced. Terri Stern did, however, raise the issue of hidden agendas that appear on news programs other than *The NewsHour*. Respondents' perceptions are elaborated on in the following remarks:

- "Yes they are. The science is covered very well." *(Joseph Andrade)*
- "I thought they were well balanced." *(Marlene Baranda)*
- "Yes I would. The things that you say in your reports, on your news, and with your science are definitely well balanced." *(Linda Bowden)*
- "Yes they are. The report about alternative fuel research and technology, however, presented two sides of the story even though one side didn't carry as much credibility. It was trying to present a balanced story even though both sides did not have the same weight." *(Jayatri Das)*
- "Yes they are." *(Laurie Fink)*
- "Yes. Yes I do." *(Shelly Gustavson)*
- "Yes." *(Karen Hager)*
- "Yes, they seem balanced. Nothing jumped out at me that was imbalanced. And I think if it had been grossly imbalanced I would have noticed." *(M.J. Morse)*
- "Let me put it this way, if it weren't balanced it wouldn't be on *The NewsHour*. That's how much I think of your news and science reports. That's my honest assessment of the show." *(Van Reiner)*
- "Yes, but I think 'balanced' is a loaded word in science. I understand the whole fairness doctrine, but the hidden agendas of Fox News have kind of bastardized that word for the rest of us. As somebody who reads a lot of science information all the time, there's always an agenda, even in science. Yes there's data, but it depends on how people want to interpret the data. In fact that's a meaningful thing because science is not a monolithic thing that lives in a box. It's a human endeavor. Every scientist brings her or his own agenda, perceptions, and background. It's just the way it is. But that's different from Fox News' skewed interpretations that are intended to promote agendas." *(Terri Stern)*

Have Science Reports Fostered an Ah-Hah Moment? Interviewees were asked if a *NewsHour* science report has fostered an ah-hah moment when they understood clearly for the first time something they knew before in a partial or confused way. Their responses loosely fall within the following three categories (*Note that numbers in parenthesis indicate the number of similar responses received.*):

1. Yes. I think so. Probably. Potentially. (5)
2. Not with my extensive science background. (3)
3. I haven't seen enough to make such a judgment. (1)

The following are their full responses:

- "Not with my extensive science background." *(Joseph Andrade)*
- "I think so." *(Marlene Baranda)*
- "I think there are bits and pieces of that. I keep pretty well informed about what's happening in science, so it's unusual for me to have an ah-hah response." *(Linda Bowden)*
- "I think so. Absolutely. With regards to museum visitors, I don't think it's the length of time as much as how it's positioned and what depth you're trying to get that ah-hah moment to be. Frankly, I think if it takes you ten minutes it may not be the ah-hah moment you could get because you're losing the kids. The question is what's the big concept that you're trying to help get them to connect with and the ah-hah moment might be a component of that. It might be the whole big concept, or it might be stepping stones where you've got at least some level of sequencing of ideas that might reinforce those. When it's a hit-and-run on a one stop basis I think sometimes we all wonder whether we've made enough of an impact to have anything stick." *(David Chesebrough)*
- "Potentially yes, which is quite a feat since I keep well informed about science." *(Jayatri Das)*
- "Probably not since I keep well informed about science." *(Shelly Gustavson)*
- "Probably." *(Karen Hager)*
- "I don't know. I haven't seen enough to make such a judgment." *(M.J. Morse)*
- "Actually, for me these reports just confirm my thoughts, my feelings, and the knowledge I have because the reports that I have seen are on subjects that I'm very interested in and that I've been trying to advocate on my own. I think the reports are great because now when I talk to people I can say: well, you know, MacNeil/Lehrer has covered the topic well so you should take a look at what they've done." *(Van Reiner)*

Interest in Collaboration. Interviewees were asked if their science center/museum has a desire to work with *The NewsHour* science content in the future. Every member of the sample displayed strong interest in the project's components and in ways that they and/or their institutions can both utilize them and collaborate with MacNeil/Lehrer Productions on further development and outreach efforts. However, since the tenor and broad range of responses to this line of inquiry defy further quantification, respondents' written remarks are included below to convey the full scope and nature of their thoughts, needs, and intentions:

- "I think so, but we're actually not open yet. We're currently building a new science center. We don't open for a couple more years, but one of the things we really want to do as we open is to have contact interaction and collaboration with outlets like *The NewsHour*. The idea is to try to put cutting edge stuff like your science reports out for the general public to view and experience." *(Joseph Andrade)*
- "Oh yeah, we're definitely interested in working with you. There has been some recent discussion about integrating the science reports into the science center here." *(Marlene Baranda)*
- "Yeah, absolutely! We would love to bring something like that into the science center. A two-minute segment is great and ten minutes would be as much as we could possibly use. Continuing with the conversation we started at ASTC last year and being able to bring current science news to our guests would be awesome. We do something that we call

'movie shorts' and it would be great to tap into clips of your science reports for our museum guests." *(Linda Bowden)*

- "Yeah. You just hit a sweet spot. I'm actually chairing the committee of the ASCT Board, which is down the street from you in D.C., to explore how we can partner more with like minded organizations that are trying to help the public become engaged in understanding science so that they can guide their own actions and political decisions and the like. I can actually give you contact information because what we're trying to do is identify and substantiate the impact that we are all having on public understanding. And then, how can we better cross reference and strengthen our collective efforts by working together?

  In my keynote at the upcoming ASTC conference I'm going to address how non-profit management is a value proposition between you and the community. You put forth a value and the community tells you how much they're willing to support that. If you want to raise the support, I think you have to focus on raising the value, and certainly MacNeil/Lehrer has been a great value to the community. But as times change I would strongly encourage that we start to look across domains. I'm also sensitive to this because we have the only PBS station within a science center. So I spend a lot of time thinking about how media, particularly PBS, interfaces and can interface with institutions like science centers. So if you're interested, I can actually give you names and contact information within ASTC if you want to follow up on that conversation. We have forty-two countries represented in the ASTC group." *(David Chesebrough)*
- "We would be interested in offering visitors the latest news and information if it were in a short enough format. But it would really have to be a selection of timely presentations that are generally no more than ninety-seconds in length to be out on the floor of the museum. I'm not saying that all the reports should only be that long, but in terms of exhibit use they need to be short presentations. Perhaps you could help us with this." *(Kim Cavendish)*
- "We have been seeking funding for putting video panels up in some of our exhibits with the idea of tapping into some of *The NewsHour* content for those topics. It's just a question of our having the equipment to make that possible." *(Jayatri Das)*
- "It wouldn't be me who was doing it so I can't say for sure, but potentially there definitely is that possibility. It's definitely possible." *(Laurie Fink)*
- "For my work, it would be helpful if I had a way of getting updates or information about a story that is going to be posted online. When I'm doing online research for projects it would help if I were on an e-mail list that was used to send out announcements and reminders about upcoming science reports or interviews that will be posted online. Some of the reports may not be relevant to my work, but it's reassuring to know that it's there. I would check *The NewsHour*, along with CNN and The New York Times, for general science news and then I would go to very specific science Web sites or else I'll start doing Google research on a scientific topic. Sometimes I forget about *The NewsHour* as a science resource like NOVA or the Discovery Channel because it falls in-between a general news and a science program.

  We don't often put pre-canned programs in our displays only because there's a time limit or threshold of patience that our visitors have after about two minutes. We try to limit all of our videos to about two to three minutes. And, depending on the scientific topic, we may have curatorial staff here who specialize in the topic. So, our museum is very focused on featuring our own researchers first. If it's a topic that we don't have any expertise in, then of course we would be willing to feature other researchers. If your science reports were edited to two minutes they would be very useful for us. A lot of our projects have so much lead time we are often involved in the creative development of the videos we feature. So to be featured in the museum would often require more editorial oversight and input from us as a client than outside producers may want." *(Shelly Gustavson)*
- "Yes, if the reports aren't skewed too American to put out on the floor here in Ontario. Otherwise, we could use them to present current science topics. It depends on the topic and on the context in which we are using it. They can certainly be utilized by us in our research." *(Karen Hager)*

- "One of the things we're look at here in terms of our strategic planning forward is first and foremost we are a national center, therefore we try to have an Australia-wide impact. I'm also the Executive Director of the Asia Pacific Network of Science and Technology Centres (ASPAC), so were often trying to collaborate on a regional level as well. In terms of these things, more and more we're trying to communicate such things or at least look forward to a future where we've got the capability of communicating things using up-to-date communications technologies via Web streaming or other means of digital communications that we can use to actually attract attention and get these things out to where the people are in a very busy environment.

  I'm always keen to learn of all these initiatives and this whole idea of getting science news out to the people is one of our big priority areas that we would like to move into. We need to build up some further capability and get resources behind our ability to do that. Certainly in this part of the world we're very keen to play a facilitating role in that endeavor." *(Brenton Honeyman)*
- *The following are remarks from Emyln Koster (President and CEO of Liberty Science Center) and Elizabeth Romanaux, the center's V.P. of Communications:*

  Koster: "Elizabeth Romanaux, our V.P. of Communications, and her colleagues brought notes to me about the session you conducted at ASTC with the invited group from the science center profession. I'd like to bring her into our conversation."

  Romanaux: "One of the areas in which it would be a possibility for us to work together would be our "Breakthroughs" area where we have a different changing subject every three months. That would be a possibility. But we're also interested in how we could do some things on our Web site together because we're trying to make that a lot more dynamic. If you go to *iTunes U*, which is now the learning and education component of iTunes, our science center has over a hundred different audio offerings that you can download and use to learn about aspects of science. We have the largest presence and most hits of any institution on the site. If you take a look at that it will help you understand what we have to offer. Perhaps we could work together on this development."

  Koster: "If the right common ground between the Liberty Science Center and *The NewsHour* is the science that's in the news in a contemporary fashion, then I would just underscore that our use of popular media and what we cover in this changing "Breakthroughs" exhibition area is by definition our choice of something which has legs on it that's contemporary and that moves the science center into much more of a science now, science everywhere kind of mode.

  The piece you showed at the L.A. ASTC meeting actually engendered some discussion about whether you are trying to be too fair in giving all sides of the issue equal air time when in fact most of these issues have some consensus about what's right. Part of my recollection from that discussion is that the group was encouraging you to assume more authority as being able to weigh in through the various viewpoints and basically distill what was the consensus rather than leaving it as a he said, she said kind of report. That's actually what the Liberty Science Center and other science centers are trying to do. We are taking an issue and creating or synthesizing a presentation with learning outcomes that are a microcosm of the issue. I think that's a new role for science centers and that's very much what we're about.

  Science is embedded in larger social and environmental issues. This science center has moved away from just presenting the phenomena of scientific principals, processes or forces. To put this into a current context, this week at Liberty Science Center we're the venue for the National Teachers Academy of Exxon Mobile Corporation. So right behind the science is how people learn and what is the role of the science center and museum in that context. We need to understand how people interact with information in the total construct of society and how their insight or action is sparked by experiences rather than just putting science in front of people without providing ways of accessing that science beyond the science center.

For example, on September 8th, the day before the Giant Screen Cinema International Conference and Tradeshow begins here, I'm a Co-Principal Investigator for the National Science Foundation on a daylong symposium that is looking at how to realize the greater potential of the giant screen film genre for science and society topics. We on the exhibition side of that pipeline are concerned about maximizing the opportunity to convey key points of learning about science subject matter, whether it's an ecosystem, space, the human body, or technology. I guess what this says is that there are many different tools in the educational toolkit about science and whether it's exhibitions, demonstrations, dialogues, television, giant screen film experiences, online activities, or high-definition 3-D experiences, a place like Liberty Science Center is a good laboratory in which to see many of those in operation at the same time.

I will link you with our exhibition and program people when your colleagues come here for further discussion, because in many ways they're more central to the content. I think that's one of the ways in which we can use your content is through them. I hope something can draw us closer together in the future."

- "I think there could be a partnership at some point in the future. As it is right now we're so busy generating our own content that it's not easy to see another way forward. I think that if we were to explore it together and formulate it such that we make a commitment to each other to try to do that in partnership, then yes I think it could be done. I agree that such a linkage would be beneficial for both of us. For those of us who are in the so-called information biz, it behooves us to really coordinate. So I would be all for that. I'm all for collaboration. I always think that's the wise way to go. I think *The NewsHour* is a terrific program so I would love to see some more collaboration. We certainly see eye-to-eye. If you have specific ideas about ways we can collaborate please let me know." *(M.J. Morse)*
- "I would say in a general sense yes. I know we have some staff members here who have passions about several of the topics covered in *NewsHour* science reports and that would be a discussion we would welcome." *(Van Reiner)*
- "Even though we are a small academic museum, we do share information and recommendations. There certainly are venues in our museum for interactive kiosks or short versions of your science reports that I could imagine folks here utilizing out in the exhibit space. Quite frankly, the fact that you are MacNeil/Lehrer *NewsHour* and not Discover.com or Discovery Channel also adds gravitas to what you folks produce and would make it more appealing to Yale University.

  I'm going to really step out on a limb here. The curriculum that we're working with now is utilizing a science pedagogy called "event-based science" that was developed by an educator down in Maryland, a guy by the name of Russell Wright. Basically, he observed that kids, especially in the middle school and lower high school grades, want to connect with something in the real world. He proposed taking some real world event, like lime disease and West Nile virus, that has actual news footage that can be used to talk to kids about the event.

  If there were anything that you folks had that could touch on some of the science topics that we might want to be presenting in the future, that would be fabulous. That would really be wonderful. We're talking about two or three minute clips. The thing that we try to incorporate into any science unit that comes out of our program is the recognition that kids today face this unbelievable glut of information and a lot of it, to use the scientific term, is crap. Unfortunately, they don't know if it is or not. To be able to give kids information in such a way that encourages them to become critical thinkers and to be healthy skeptics about what it is they're seeing or hearing is very valuable. For kids to learn what is authentic and what is inauthentic is very important. Today, many of the topics that people, especially the congress and presidential candidates, have to be knowledgeable about are science-based." *(Terri Stern)*

Online Field Test

Demographic data, findings and quoted remarks presented below were obtained from written responses to an online field test questionnaire.

Field Test Procedure

Field test research obtained feedback from individuals who responded to an online questionnaire after reviewing an average of approximately 3 *NewsHour* science reports. Members of *The NewsHour's* general audience who have requested to receive *Science Alerts* via e-mail informing them about upcoming science reports constitute the sample for this study.

Field Test Demographic & Background Variables

A total of 32 field testers (19 female, 13 male) who are representative of *The NewsHour's* television and Internet audiences provided feedback about the program's science reports via an online questionnaire designed to explore the key research issues specified above for this study. Their feedback regarding demographic and background variables is summarized below.

Field Tester Education Level. Table 3 shows that 68.8% of the online field testers have reportedly earned a graduate or professional degree, 25.0% have a college degree, and 6.3% have completed some college.

Table 3. Highest Level of Education Completed (N=32)

Education Level	*Responses Received**
Graduate or Professional Degree	22 (68.8%)
College	8 (25.0%)
Some College	2 (6.3%)
High School	–
Some High School	–
Other	–

*Totals may not equal exactly 100.0% due to rounding.

Occupation. Of the 32 field testers who participated in this evaluation research, 19 (59.4%) reportedly have an occupation related to science and 13 (40.6%) do not. Probing further, when asked to briefly describe their occupation, two respondents simply said they were retired. Eleven others offered written descriptions that can be loosely divided into the following five categories, which include their actual description (Note that education and computers/technology are the most cited career fields):

Education

- *"University science lecturer"*
- *"Teaching at Community College"*
- *"High School Biology and Science Research Teacher"*
- *"Secondary science teacher"*
- *"High school science teacher"*
- *"High School Biology Teacher"*
- *"High School Biology and Astronomy Teacher"*
- *"Middle school science teacher"*
- *"Science teacher"*
- *"Teacher"*
- *"Instructor"*
- *"High School Librarian"*

Computers/Technology

- *"Computer systems analyst"*
- *"Computer programmer"*
- *"Computer"*
- *"Technology consultant for non-profit organizations"*
- *"Aerospace quality management"*
- *"Electrical engineering manager"*

Science/Medicine
- *"Experimental geophysics: earthquakes"*
- *"Research biologist and quality assurance"*
- *"Quality assurance at commercial environmental chemistry lab"*
- *"Nurse Practitioner... very evidenced base care"*

Writing/Publishing
- *"Editor-in-Chief, Physics Today magazine"*
- *"Medical science writer"*
- *"Freelance writer"*
- *"Fiction writer"*

Management/Consultant (other than science/technology)
- *"Nonprofit management"*
- *"Manager"*
- *"Consultant to non-profit organizations"*
- *"Retirement Planner"*

Frequency of Viewing The NewsHour Broadcasts. Asked how frequently they usually view *The NewsHour with Jim Lehrer* (See Table 4), 77.4% of the respondents reportedly watch the program as often as they can, with another 6.5% indicating they watch it a few times each month and 9.7% watch it a few times each year. Two respondents indicated that they have never seen the program on television, but do view *NewsHour* reports online.

Table 4. Frequency of Viewing NewsHour Broadcasts (N=31)

Frequency	*Responses Received*
As often as I can	24 (77.4%)
A few times each month	2 (6.5%)
A few times each year	3 (9.7%)
Only once or twice ever	–
I have never seen the program	2 (6.5%)

*Totals may not equal exactly 100.0% due to rounding.

Frequency of Viewing Science Reports on The NewsHour. Asked how often they have viewed science reports on *The NewsHour with Jim Lehrer* (See Table 5), 40.6% of the respondents view the reports whenever they are broadcast. A similar percentage have reportedly viewed the reports a few times each month. Another 12.5% indicated having seen them a few times each year. Two respondents had not viewed science reports on *The NewsHour* broadcasts prior to this study, but do reportedly view them online.

Table 5. Frequency of Viewing Science Reports on The NewsHour (N=32)

Frequency	*Responses Received*
Whenever they are broadcast	13 (40.6%)
A few times each month	13 (40.6%)
A few times each year	4 (12.5%)
Only once or twice ever	–
I have never seen a broadcast science report	2 (6.3%)

Use of Online NewsHour Features. Field testers were asked which of the *Online NewsHour* features listed in Table 6 they have used, if any. Note that the three most frequently cited features are the *Science Reports* main page, the *Online NewsHour* main page, and the *Earth and Environment* section of *Science Reports*, respectively.

Table 6. Online NewsHour Features Used

Feature	*URL*	*Responses Received*
Online NewsHour main page	www.pbs.org/newshour	19
Science Reports main page	www.pbs.org/newshour/science	23
Body and Brain section	www.pbs.org/newshour/science/body	11
Earth and Environment section	www.pbs.org/newshour/science/earth	16
Space section	www.pbs.org/newshour/science/space	7
Technology section	www.pbs.org/newshour/science/technology	9
Video section	www.pbs.org/newshour/science/video	10
Archive section	www.pbs.org/newshour/topic/science	6
RSS Feed	www.pbs.org/newshour/rss	–
Podcast	www.pbs.org/newshour/rss/media	3

Probing further, field testers were asked how often they visit the *Science Reports* section of *Online NewsHour* (See Table 7). Of the 32 respondents to this inquiry, 21.9% reported that they visit *Science Reports* a few times each week. An additional 50.0% indicated that they visit the section a few times each month and 15.6% visit it a few times each year. Four respondents said they had not visited the *Online NewsHour: Science Reports* section prior to this study.

Table 7. Frequency of Viewing Online NewsHour: Science Reports (N=32)

Frequency	*Responses Received*
A few times each week	7 (21.9%)
A few times each month	16 (50.0%)
A few times each year	5 (15.6%)
Only once or twice ever	–
I had never visited *NewsHour: Science Reports*	4 (12.5%)

Ways Field Testers Viewed NewsHour Science Reports. Online field testers were asked to specify all of the ways they have viewed/heard *The NewsHour's* science reports. Table 8 summarizes their responses to this inquiry. Note that television broadcasts and Web site/streamed videos are the most frequently cited avenues of access, respectively.

Table 8. Ways Science Reports Were Viewed

Frequency	*Responses Received*
Television	26 (77.4%)
Web site/streamed video	21 (6.5%)
DVD	9 (9.7%)
Podcast	2 (6.5%)
Purchased a video	1 (6.5%)

Science Reports Viewed By Field Testers. Table 9, on the following page, lists the 37 science reports containing streaming video that field testers selected to review. Note that their reviews included an examination of approximately 3 reports, on average.

Table 9. Science Reports Viewed (with accompanying video)

Science Report	*Count*
High Tech High School Pushes Hispanic Students to Become Top Achievers	1
Bottling Giant, Maine Residents Battle over Water	2
Scientists Find Stone Age Burial Ground From Once-Green Sahara	1
Government Details How Anthrax Investigation Led to Army Scientist	1
Beijing's Pollution a Contentious Foe for Olympic Athletes	2
Researchers Find Drug That Mimics Effects of Exercise	3
California Science Center Moves to a 'Green' Home	1
Oregon Mulls Shoring Up Schools Against Earthquakes	3
Doctors Seek to Improve End-of-Life Care for Cancer Patients	1
Alaskan Village Copes With Real-life Impacts of Global Climate Change	1
Issue of Online Privacy Grows as Companies Track 'Digital Footprints'	3
G-8 Vows to Cut Emissions but Divisions Remain	1
High Oil Costs May Advance Conservation Research	1
Oregon Discovery Challenges Beliefs About First Humans	1
As Oil Prices Rise, Carmakers Look to Electric Future	2
NASA Lander Discovers Evidence of Ice on Mars	2
Researchers Examine Impact of Exercise on Aging	3
Lawmakers Struggle to Agree on Plan for Emissions Cuts, Energy Policy	9
After Major Cyclone, Bangladesh Worries About Climate Change	3
Monkeys Learn to Control Robotic Arm With Brainwaves	1
Scientists Study Final Moments of Dying Star	1
Polar Bears Listed as 'Threatened' Due to Loss of Arctic Ice	1
In Pittsburgh, Robots Help Rebuild Struggling Economy	3
Pittsburgh Museum Reinvents Model of Dinosaur Exhibit	2
Scientists, Students Study Space Storms in THEMIS Project	2
Greenland Residents Detect Sea Changes	1
Breakthrough Set to Radically Change Stem Cell Debate	1
Physicist Searches for Alternative Fuel Technologies	8
Biographer Discusses Einstein's Life, Legacy	1
Dogs Shed New Light on Cancer Genes in Humans	5
DNA Testing Reunites Families Separated by War	4
Music Provides Window into Brain Function	8
Astronomers Debate Pluto's Planetary Status	4
Airplane Production Evolves with New Technology	2
Mars Rovers Roll On	4
Costly New Orleans Levee Repairs May Be Inadequate	4
Students Compete in Robotics	1
Total	*94*

Field Test Findings

As previously specified, field test research obtained feedback from 32 testers/reviewers (19 female, 13 male) who responded to an online questionnaire after reviewing approximately 3 *NewsHour* science reports. The following findings emerged from their responses to this inquiry:

Overall Rating of The NewsHour's Science Reports. On average, the 32 field testers who responded to an online questionnaire after reviewing science reports gave them an overall rating of 4.72 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). As shown in Table 10, below, questionnaire respondents rated the science reports they viewed as either "Very Good" (71.9%) or "Good" (28.1%).

Table 10. Overall Rating of The NewsHour's Science Reports (N=32)

Categories	*Responses* Number (%)	*Mean Rating*
Very Good	23 (71.9%)	
Good	9 (28.1%)	**4.72**
Average	–	
Poor	–	
Very Poor	–	

Probing further, field testers were asked to describe their overall reactions to *The NewsHour's* science reports. Four of the respondents simply wrote the word "Excellent." Others expressed the following similarly positive but more elaborate impressions and suggestions:

- *"Very informative. I should watch more often. Perhaps the Science Alert has to be more inviting."*
- *"They are excellent. Over all I would be careful and focus on evidence that supports valid conclusions. A recent segment on pollution in lagoons by garbage dumps after Katrina made unsubstantiated claims. This was the only segment I have seen on The NewsHour that I feel was poor quality."*
- *"I enjoy seeing or listening to them, I'm glad this kind of reporting is done, I encourage you to continue airing these kinds of reports. I especially enjoy the stories where science has a direct impact on society, where normally complex scientific concepts are shown to be relevant and indeed useful to society at large."*
- *"Didn't know so much is being done re: Biofuels. I'm passing the information onto family and friends."*
- *"Very informative and helpful in gaining a new perspective on a subject. Please keep up the good work."*
- *"I enjoy the printed articles and use them occasionally (where they fit) in my classroom. I now have another resource to supplement my classroom. Keep it up!"*
- *"I thought they were informative and they held my interest. I had read an article about the book that Levitin wrote about music and the brain and was glad to learn more about his research. I'm looking forward to watching the rest of the stories on the DVD, and already promised my mom that I'd mail it to her to watch – when I figure out how much to charge her."*
- *"I always try to watch The NewsHour when there are science reports. They are usually interesting and well researched without being over my head."*
- *"I will look online now where I had not done that up to the present time."*
- *"I look forward to them!"*
- *"I'm into science, really have no negative comments, It's wonderful to have at least one TV news cast that frequently presents science in an understandable, relatively in-depth format."*
- *"I am enjoying them."*
- *"Generally, I like the broadcasts. I would, however, like to see occasional probing of science itself rather than always the science-and-society angle. I'd like to see you more often appeal to the intrigue that comes naturally to many people in areas other than outer space, where you largely confine this approach."*
- *"They are good, but would be better if there were more science content added to them. Some are more like Frontline, than like NOVA. The cap and trade piece used arrows of differing length to indicate escaping and trapped heat. The long length of the arrows of escaping heat were confusing. I do not think that you intended them to be vectors. The Mars Rover piece is very out of date and really needs to have the production date on it. Some of the science pieces that have been broadcast would have benefitted from more background information."*
- *"Excellent presentation of timely science topics."*
- *"I learned more than I thought was possible in such a short time about subjects I know a lot about. Excellent reports and visuals."*
- *"Generally very favorable."*
- *"I think that the stories are significant and at a level that can be useful to the viewer."*
- *"Very positive. The more information the educated public – The NewsHour's demographic – can receive, the better."*
- *"They are an excellent resource to encourage the public's science literacy."*

- *"I think they are great. I appreciate the science alerts. I often try to get home on time to view and tape the reports for possible use in my classroom. I appreciate the streaming video option also. By the way, sometimes the alerts arrive at my computer after I've left school for the day. Luckily we have The NewsHour on daily and my husband often tells me when there is going to be science report."*
- *"I am interested in the topics you cover. Today, you'll show a piece on Poland Spring Water. Having lived in Maine when the company was small and locally run, and seeing how big it is now, owned by Kraft, I think, and selling water to the entire country – yes, I have some thoughts about it and am glad to see the subject covered. I have a positive reaction to your coverage, overall."*
- *"I think they're very interesting and informative, but the Science Alerts usually come out in the afternoon and I usually don't check my e-mail after school, so I miss the notice in time to watch it that night. It would be nice if you could send notices the day before as well as the day of. I do like that you can go online and view recent reports."*
- *"Watching your science reports is time very well spent. They contain applicable information."*
- *"Most interesting. We watch The NewsHour every evening. If anything, perhaps more emphasis on science would enliven the program. The other topics and views of differing sides of the war or other controversies could be cut some."*
- *"I love them! I find them always interesting and very often fascinating and I look forward to the e-mail alerts informing me of content and airdates."*
- *"I'm eager to see more reports. Keep them coming."*
- *The segments are interesting pieces that could serve as great supporting material in the classroom. I didn't spend too much time on the teachers section, but it seemed like a rich resource for teachers as well as students."*

Most and Least Liked Aspects of the Science Reports. Asked to describe the aspects of the science reports that they like the <u>most</u>, respondents offered a broad range of positive feedback about numerous aspects of their content, topics, relevance, depth, format, clarity, balance, accuracy, credibility, approach to controversy, level of interest, and educational value. Since responses to this line of inquiry defy quantification, respondents' written remarks are included below to convey the full scope and nature of their feedback.

<u>Most Liked Aspects of the Science Reports</u>

- *"Concise and to the point. Also balanced as we were presented with the pro-caprolite view and the anti-caprolite view."*
- *"I like the focus on new research, interviews with the researchers, and focus on the scientific method (question asked, data, conclusions), applications to current problems, cost benefit, problems. I also like when the background is provided to understand the concepts presented."*
- *"I enjoy the variety of topics that are covered, as well as the ability to see the principal players involved rather than just a summary read by a reporter. I thought the story about toxic trash in New Orleans recently was particularly interesting."*
- *"News I can use: What the future may look like and how to prepare for it."*
- *"I like the way the information is presented."*
- *"Dealing with controversy using real science."*
- *"Fairly fast-paced and to the point. Personal connections (real people, real situations). Modern issues."*
- *"The topics interested me. The reports were presented in an intelligent way and assumed the right level of the viewer's scientific knowledge – neither too advanced, nor too basic."*
- *"Interesting subject matter handled in an objective and thorough manner."*
- *"Can revisit them online or replay them from DVD for details."*
- *"Informative, engaging, and balanced."*

- *"Understandable presentation of potentially complicated information."*
- *"Excellent and easy to understand."*
- *"They are short clips of something I might like to learn about in more depth."*
- *"The science is made accessible and, most important, has the needed context explained for the general public."*
- *"Objectivity, accuracy."*
- *"Clarity, balance, credibility, time invested to make the points convincingly."*
- *"They try to get many of the relevant aspects of the problem covered. I thought that the Pluto piece was excellent."*
- *"Useful information about relevant topics."*
- *"Well balanced, thorough reports covering complex subjects. Applicable information."*
- *"The reports are significantly more in-depth than what you see on commercial network television."*
- *"I think that it is a level of information useful to the viewer. Very important issues on environment and energy are of extreme importance for the necessary social and political changes that will occur within our lifetime and certainly that of our children."*
- *"The broad range of topics."*
- *"They are clear and have enough depth of detail to provide the viewer/reader with a good basis for further inquiry."*
- *"They try to make science relevant to viewers. The interviewers ask good questions."*
- *"They give just as much technical information as I can handle, not being a scientist, yet keep me informed."*
- *"They were short and concise and high interest level on current topics."*
- *"Useful information about timely topics. Enlightening reports."*
- *"Present new and current information on important issues that many times are neglected in other media."*
- *"They are very well photographed and well written presentations which are long enough to clearly introduce and present the information and topics."*
- *"Clear and in-depth coverage of complex scientific topics."*
- *"Information is clearly presented and provides differing viewpoints."*

When asked to describe what they like least about the science reports, 7 of the 32 respondents simply wrote the word "Nothing," indicating there is nothing about the reports that they dislike. Four others offered the following similarly positive remarks:

- *"There isn't anything that's not valuable."*
- *"I have no complaints."*
- *"No real problems."*
- *"Do not have any."*

In contrast, others offered broad, multifaceted descriptions and critical perceptions of what they like least about the science reports. Consequently, their written remarks and suggestions, which defy quantification, are included below.

Least Liked Aspects of the Science Reports

- *"At times there is a delay in hearing about science news on The NewsHour vs., for example, Google news. The story about the arrival of humans in the Pacific Northwest recently aired on The NewsHour, was preceded by some time on Google news, for example."*
- *"Could not understand some of the technical information on the DVD you sent because much of it involved terms I did not understand and also because it went by so quickly."*
- *"Giving generously to emotional sides of issues."*
- *"Watching dogs with cancer was depressing to me, although it didn't seem to bother my miniature poodle mix."*

- *"My only complaint involved the Geroscience/aging report that included too much coverage of a scientist who has an independent business (Dr. Kenyon). It was hard to believe her after we knew that she had a financial stake."*
- *"Not enough video feeds. I was unable to see other science reports., i.e., Alternative Fuels, Global Warming Debate, Polar Research, and Space Storms. I was disappointed that there were no feeds after July 25, 2008."*
- *"Could not easily find the video archive and, once streaming, could not easily get to the main report (e.g., for the Alaskan village slide show). Generally, the connection was jerky at times."*
- *"Difficulties in getting streaming video or audio slideshow to work."*
- *"They do not have enough diagrams to explain the science. The date of the production of the program is not given."*
- *"The production quality on some of them is very sketchy. The questioner in the interview with GM's chairman was completely inaudible."*
- *"The coverage of critical issues is sometimes a little weak – not reported fully, and/or presentation is ambivalent or weak with respect to the representation of the science."*
- *"I wish they were broadcast more often and at somewhat later times."*
- *"They are sometimes too short."*
- *"I think we have a silence of the labs – large corporations are silencing discovery and education about the causes of cancer, for one, and there is an unwillingness of the media to cover it."*
- *"The science content was very weak, especially on the DNA clip. The human interest factor was high, but did not go into detail about DNA or the matching process, it did not even show a gel electrophoresis. The airplane model was great for technology and showing the fitting of parts."*
- *"You should have more science reports. I look forward to learning more."*
- *"Most are accurate and new to me. However, some of the Health Reports I find lacking in totally current information. I suggest more Medical professionals be included if only in the review prior to the airing."*
- *"I wish there were more links online to connect to sources so that viewer interest and activism could be mobilized."*
- *"Not in-depth enough."*
- *"In the CANCER segment. I though a graphic of cheek cells taken from the dog, the nucleus and DNA with mutations would help present needed background information. This was also true in the DNA match video. In this DNA Match video I would have liked a graphic showing matches of DNA bars or numbers representing size of DNA fragments."*
- *"Segments could be a bit shorter by a minute or two; in some cases. Camera work in field could be better. Animation might also be employed to help illustrate concepts."*

Agreement/Disagreement With Statements About the Science Reports. Online field testers were asked to rate their agreement or disagreement with each of the fifteen statements shown in Table 11, on the following page, using a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Note that, on average, all of the statements received high agreement ratings (more than 4.00), except an interest in receiving RSS feeds, which garnered a substantive 3.46 rating, on average. The three statements that respondents agreed with most are: (1) *The NewsHour* broadcast reports on science are informative; (2) I will recommend *The NewsHour* broadcasts to others; and (3) Overall, I think the science reports are a useful educational resource. Respondents did not rate statements that were reportedly not applicable to their review.

Table 11. Rating Agreement/Disagreement With Statements

Statement	*N*	*Rating*					*Average*
		1	*2*	*3*	*4*	*5*	
The NewsHour broadcast reports on science are informative.	*32*	–	–	–	6	26	*4.81*
The reports effectively in communicate science content.	*32*	–	–	1	11	20	*4.59*
The science reports motivated me to learn more about the topic.	*32*	–	–	4	16	12	*4.25*
Online NewsHour is a useful resource for science information/concepts.	*31*	–	–	1	11	19	*4.58*
Online NewsHour provides features that are easy to use.	*31*	1	–	3	14	13	*4.23*
Viewing science reports online via streaming video is a valuable feature.	*29*	1	–	3	6	19	*4.45*
Science Alert is a useful way to get information from *The NewsHour*	*30*	–	2	1	5	22	*4.57*
Listening to audio Podcasts of science reports is a valuable feature.	*20*	–	1	6	4	9	*4.05*
Access to transcripts of science reports is a valuable feature.	*29*	–	1	2	17	9	*4.17*
Teacher lesson plans are helpful.	*17*	–	–	3	1	13	*4.59*
I would like to receive RSS feeds from *The NewsHour*.	*26*	1	4	9	6	6	*3.46*
I will use *Online NewsHour* as an educational resource.	*26*	–	2	2	11	11	*4.19*
I will recommend *Online NewsHour* to others.	*31*	–	–	3	9	19	*4.52*
I will recommend *The NewsHour* broadcasts to others.	*30*	–	1	–	6	23	*4.70*
Overall, I think the science reports are a useful educational resource.	*32*	–	–	1	9	22	*4.66*

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Research Design, Program Evaluation, Learning Assessment,
Statistical Analysis, and Instruction in Education and Technology

Focus Group Study of
The New'sHour's Science Unit

Performed at the 2008 ASTC
(Association of Science-Technology Centers)
Annual Conference in Philadelphia, Pennsylvania on October 19, 2008

Report for

MacNeil/Lehrer Productions
2700 South Quincy Street
Arlington, VA 22206

by

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November 30, 2008

Research Report No. 08113005

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Focus Group Study of

The NewsHour's Science Reports

Executive Summary

November 30, 2008

EVALUATION DESIGN – The findings summarized here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. Content of the reports will appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all science reports are archived on the *Online NewsHour* Web site (www.pbs.org/newshour/science), which includes additional resources such as audio Podcasts, teacher lesson plans, background reports, slideshows, and interactives.

RESEARCH GOALS AND ISSUES – The general purposes for this study are to inform decision making about the content, presentation design, and usability of the project's video segments and Web site. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. In addition, attention was given to exploring the mutual benefits of building partnerships between *The NewsHour* and science centers/museums.

RESEARCH PROCEDURES – A 75-minute focus group session was performed for this evaluation study on October 19, 2008 with a sample selected from the 2008 ASTC (Association of Science-Technology Centers) Annual Conference in Philadelphia, Pennsylvania. The session obtained written and oral feedback from 16 conference attendees representing science centers/museums located in urban and suburban geographical settings.

Over the course of the focus group session participants provided written and oral feedback about project components, prior evaluation findings and partnership/collaboration arrangements between *The NewsHour* and science centers/museums represented at the 2008 ASTC focus group session. This approach permitted participants to comment after reflection on their institution's needs, staff use of news resources, public use of *The NewsHour's* science reports, and avenues for collaboration. In conjunction with group discussions, a post-presentation questionnaire was employed to obtain a depth and breadth of quantitative and qualitative feedback and to circumvent the influence of outspoken participants.

Toward these ends, Lea Winerman described the project's components and explained its goals and objectives. Focus group participants were then asked to view a 10-minute video segment about alternative fuel research/technology, titled "Physicist Searchers for Alternative Fuel Technology," originally broadcast on May 2, 2007. Following the viewing, Lea Winerman demonstrated the *Online NewsHour's* content and features, with particular attention being given to the *Science Reports* area of the Web site. Focus Group participants were asked to note the supporting curriculum elements contained on the project's Web site, which includes program transcripts, supplemental narratives, charts, images, archives, audio Podcasts, and teacher lesson plans. At the conclusion of the introductory presentation, Franmarie Kennedy discussed current partnerships with science centers/museums and opportunities for similar alliances. After summarizing prior evaluation findings, Arthur Johnson conducted a group discussion and participants provided written responses to a printed questionnaire.

DEMOGRAPHICS – As previously specified, written and oral feedback was obtained from sixteen ASTC Conference attendees (4 male, 12 female) representing fifteen urban and suburban science centers/museums listed in the report on Page 3.

Two members of the group have reportedly earned a doctorate, ten have a master's degree, and five have a bachelor's degree. When asked to describe themselves, fifteen of the sixteen questionnaire respondents indicated that they are members of a science center/museum staff, with several describing additional appointments/areas of responsibility specified in the report.

Asked how often they watch *The NewsHour with Jim Lehrer*, 18.8% of the respondents reported watching the broadcast as often as they can, 37.5% watch it a few times each month, and 31.3% watch a few times each year. When asked how often they've visited the *Online NewsHour* Web site, 43.8% of the respondents reportedly had never visited it and a similar percentage had visited the site once or twice.

Probing further, respondents were asked to specify all of the ways they have viewed/heard *NewsHour* science reports prior to Lea Winerman's presentation. Of the sixteen respondents to this inquiry, three (18.8%) had reportedly viewed *NewsHour* science reports on television and the Internet (*Online NewsHour* – www.pbs.org/newshour/science), eight (50.0%) had viewed them only on television, four (25.0%) had viewed them only via *Online NewsHour* streaming video, and one respondent has viewed *NewsHour* science reports on a DVD.

SUMMARY OF FINDINGS – Research findings summarized below resulted from an analysis of focus group participants' oral and written feedback. Every member of the group displayed strong interest in the project's components and in ways that their institutions can both utilize them and collaborate with MacNeil/Lehrer Productions on further development and outreach efforts. Note that broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents' actual oral and written remarks are included in the report. Readers are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback.

Group Discussion Feedback

The summary of findings presented below were obtained from oral comments offered by focus group participants during a post-presentation discussion.

The group discussion began with one participant's conjecture that while experience has led science centers to conclude that, outside of a theater, their visitors will usually not watch a video that extends for more than about two minutes, perhaps science center's should make an effort to expand their visitors' attention span. In response, a participant suggested that perhaps video kiosks should include both a short and a long version of a video science report. Another promoted the idea of showing a short segment of video and then facilitating a discussion rather than expecting visitors to passively watch a video for ten minutes.

Other ideas focused on editing the videos into segments and perhaps formatting the original video in a manner that allows for easy separation into different themes or topics. One participant recommended that science centers look beyond finding ways to fit the video science repots into kiosks as they are currently being used and instead try to develop more innovative ways to incorporate the reports into their exhibit space.

A discussion participant who manages a science center's planetarium and writes the scripts for its shows expressed a desire to use the video portion of *The NewsHour's* science reports, but remove the audio so that the show's narrator can read the prepared script to the audience. Another made a request for science centers to have input into the selection of science report topics.

Science centers reportedly have a need to provide their visitors with current information. It was observed that *The NewsHour's* science reports could meet this challenging need. One focus group participant suggested that science reports include links to science center resources for additional information and related local stories. Another said that incorporating content from RSS feeds into a science center's Web site, exhibits, and roving explainer/activity carts can provide timely news and information that reduces the time required to maintain their site and keep their exhibit area current.

The positive value that providing transcripts of video science reports offers *Online NewHour* visitors is reinforced by participants' feedback. Similarly, providing accompanying hands-on activities along with *NewsHour* science reports would not only be beneficial for teachers, students, parents, young children, and the general public, it would also enable science centers to extend their public contact.

Feedback obtained from focus group participants suggests that the appropriate age range for online activities might depend on whether science report viewers are primarily members of the *NewsHour's* television or Internet audience. Their discussion conveys a perception that a variety of online activities accompanying science reports should be developed for both an older television audience and a younger Internet audience.

One focus group participant wanted to know the easiest method for downloading *NewsHour* science report files for use and possible editing at the science center. An inquiry was also made about how far in advance a science center could be notified about the development and release schedule for upcoming *NewsHour* science reports.

A suggestion was made for *Online NewsHour* to contain an archive of video science reports that have been edited by science centers. It was also recommended that a list of the edited videos include information about each video's length, its target audience, if it was intended for teachers, how it was used in the science center, and the theme of the edited report.

It was pointed out that science centers have associations with scientists conducting research around the world who may be of benefit to the production of *NewsHour* science reports. Consequently, it would reportedly be beneficial for both *The NewsHour* and science centers to keep avenues of communication open.

Questionnaire Feedback

Findings presented below were obtained from written responses to a post-presentation questionnaire.

On average, the sixteen focus group participants who responded to the post-presentation questionnaire gave *The NewsHour's* science reports an overall rating of 4.50 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). Half of them rated the reports as "Very Good" and half rated them as "Good." As a follow-up question, respondents were asked to describe their overall reactions to *Online NewsHour's* science reports. Responses to this inquiry all convey positive perceptions (See Page 9). Twelve focus group participants offered broad ranging recommendations when asked to specify key objectives that they think should be met by *The NewsHour's* science reports (See bottom of Page 9).

All of the focus group participants said that they would like to receive e-mail alerts to upcoming *NewsHour* science broadcasts. When asked if their science center/museum would be interested in linking to *Online NewsHour* to offer public access to science journal reports, video clips, and other resources, all sixteen focus group respondents indicated that it would.

Given the availability of *NewsHour* science reports in a 3-4 minute video format, all sixteen focus group indicated that their science center/museum would have an interest in using them. When asked in what capacity the videos would be used, ten expressed a desire to include them on their institution's Web site, nine respondents said they would show the videos at public sessions, and seven indicated that they would be displayed on kiosks. Five respondents identified other uses for the videos, such as starting or ending "sessions" in school, for staff professional development, outreach programs to schools, inclusion in other electronic media, and use in teacher workshops.

When asked to describe "turnkey" materials (e.g., video, Web resources, curricula, etc.) or shared activities that *The NewsHour* might develop in partnership with participants' institutions, respondents offered ideas that focused on materials associated with curricula development and

teacher resources, hands-on student and family activities, video and Web site production, traveling exhibits, and community science forums.

Focus group participants were also asked to offer additional ideas for partnership opportunities between *The NewsHour* and science centers/museums. Their broad ranging feedback to this inquiry is contained in the report on Page 11. As a follow-up, they were asked to describe any barriers to forming a partnership between *The NewsHour* and science centers/museums. Their responses to this inquiry focused on the time required to watch and integrate reports into their programs and exhibits, the technical capacity of their science center/museum, and issues related to "partner vs. one-way" responsibilities.

Focus Group Study of

The NewsHour's Science Reports

Performed at the 2008 ASTC
(Association of Science-Technology Centers)
Annual Conference in Philadelphia, Pennsylvania on October 19, 2008

November 30, 2008

Project Description

The findings reported here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. Content of the reports will appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all science reports are archived on the *Online NewsHour* Web site (www.pbs.org/newshour/science), which includes additional resources such as audio Podcasts, teacher lesson plans, background reports, slideshows, and interactives.

Research Goals and Issues

The general purposes for this study are to inform decision making about the content, presentation design, and usability of the project's video segments and Web site. Attention was given to uncovering any obstacles, barriers or unintended negative effects that science center/museum administrators think may emerge. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. In addition, attention was given to exploring the mutual benefits of building partnerships between *The NewsHour* and science centers. Toward these ends, both descriptive and explanatory findings are reported. This summary of findings contains a depth and breadth of feedback provided by focus group participants about current conceptions of *The NewsHour's* science reports. This information was obtained from 16 representatives of U.S. science centers and museums.

The researcher (Dr. Arthur Johnson, Director of Edumetrics) looked for patterns in the quantitative and qualitative data specified in the following section of this summary report. Communication between the evaluator and project staff took place at the outset of research in order to review developments and agree upon specific evaluation issues. Toward these ends, in addition to obtaining demographic and background information, research methods focused on informing our understanding about the following key issues:

1. How do focus group participants rate *The NewsHour science* reports they've viewed, overall?
2. What ideas and suggestions do they have to share with regards to the science reports, their science centers' use of the reports, and mutual development/production efforts?
3. What key objectives do they think should be met by *The NewsHour's* science reports?
4. Would their science center/museum be interested in linking to *Online NewsHour* to access our online science journal reports, video clips, and other resources for teachers and students?
5. Given the availability of *NewsHour* science reports in a 3-4 minute video format, would their center/museum have any interest in using them? If so, in what capacity? If not, why not?
6. What "turnkey" materials (e.g., video, Web resources, curricula, etc.) or shared activities might we develop together?
7. What other ideas would they suggest to us for a potential partnership with *The NewsHour*?
8. Are there barriers to such a partnership that they would like to share?
9. Would they like to receive e-mail alerts about upcoming *NewsHour* science broadcasts?

Research Procedures

A 75-minute focus group session was performed for this evaluation study on October 19, 2008 with a sample selected from the 2008 ASTC (Association of Science-Technology Centers) Annual Conference in Philadelphia, Pennsylvania. The session obtained written and oral feedback from 16 conference attendees representing science centers/museums located in urban and suburban geographical settings.

Applying a modified nominal group technique, the session was divided into the following six activities:

- Statement of research issues;
- Review of project components, current partnerships, and prior evaluation findings;
- Silent generation of ideas by participants regarding research issues;
- Writing down ideas;
- Group discussion of participants' ideas;
- Written response to post-presentation questionnaire;

Over the course of the focus group session participants provided written and oral feedback about project components presented by Lea Winerman (Associate Editor – Science, *Online NewsHour*) and prior evaluation findings summarized by Arthur Johnson. In addition, Franmarie Kennedy presented information about current partnerships between *The NewsHour* and science centers/museums. She also conducted a discussion to elicit ideas and suggestions regarding similar partnership/collaboration arrangements with science centers/museums represented at the 2008 ASTC focus group session. This approach permitted participants to comment after reflection on their institution's needs, staff use of science news/information resources, public use of *The NewsHour's* science reports, and avenues for collaboration. In conjunction with group discussions, a post-presentation questionnaire was employed to obtain a depth and breadth of quantitative and qualitative feedback and to circumvent the influence of outspoken participants.

The feedback obtained informs our understanding about the efficacy of *The NewsHour's* science reports for diverse informal science center learning environments and outreach activities. This methodology also provides insights into planned and unplanned outcomes of project implementation. Such information will be considered by the project's designers and producers along with other data in order to make decisions about the final complexion of the project's various broadcast and Web-based components. It will also inform decisions and planning regarding partnerships/collaborations.

Toward these ends, Lea Winerman described the project's components and explained its goals and objectives. Focus group participants were then asked to view a 10-minute video segment about alternative fuel research/technology, titled "Physicist Searchers for Alternative Fuel Technology," originally broadcast on May 2, 2007. Following the viewing, Lea Winerman demonstrated the *Online NewsHour's* content and features, with particular attention being given to the *Science Reports* area of the Web site. Focus Group participants were asked to note the supporting curriculum elements contained on the project's Web site, which includes program transcripts, supplemental narratives, charts, images, archives, audio Podcasts, and teacher lesson plans. At the conclusion of the introductory presentation, Franmarie Kennedy discussed current partnerships with science centers/museums and opportunities for similar alliances. After summarizing prior evaluation findings, Arthur Johnson conducted a group discussion and participants provided written responses to a printed questionnaire.

Demographic & Background Variables

As previously specified, focus group research obtained feedback from sixteen ASTC Conference attendees (4 male, 12 female) representing fifteen U.S. science centers/museums located in urban and suburban geographical settings. Table 1, on the following page, lists these institutions and their location.

Table 1. Participating U.S. Science Centers/Museums

Institution	*City*	*State*
Academy of Natural Sciences	Philadelphia	PA
Cincinnati Museum Center	Cincinnati	OH
Connecticut Science Center	Hartford	CT
COSI Science Center	Columbus	OH
Discovery Center of Springfield	Springfield	MO
The Franklin Institute	Philadelphia	PA
Marian Koshland Science Museum	Washington	DC
Lawrence Hall of Science, U.C. Berkeley	Berkeley	CA
Liberty Science Center	Jersey City	NJ
Maryland Science Center	Baltimore	MD
Newark Museum Science Department	Newark	NJ
New England Aquarium	Boston	MA
Schenectady Museum & Suits-Bueche Planetarium	Schenectady	NY
Science City at Union Station	Kansas	MO
Smithsonian Institution	Washington	DC

The sixteen individuals who participated in this focus group study provided their contact information via business cards or the post-discussion questionnaire – included at the end of the report. Table 2 lists these individuals by name, title, and affiliation.

Table 2. Focus Group Participants

Participant	*Title*	*Affiliation*
Wendy Ackerman	Assistant Director	Maryland Science Center IMAX/Planetarium
Sapna Batish	Manager, Exhibits and Programs	Marian Koshland Science Museum
Jennifer Bine	Project Director	Smithsonian Institute Traveling Exhibition Service
Peter De Carolis	Traveling Educator	The Franklin Institute
Dianne Domino	Education Manager	Science City Union Station
Laurie Duncan	Education Director	Discovery Center of Springfiled
Robin E. Dungan	Battelle Master Educator	COSI Columbus – Teacher Programs
Jacqueline Genovesi	Senior Director of Education	Academy of Natural Sciences
Maria Hertneck	Outreach Coordinator/Sci. Educator	Newark Museum Science Department
Chris Hunter	Director of Archives and Collections	Schenectady Museum & Suits-Bueche Planatarium
Tonya M. Matthews	Vice President of Museums	Cincinnati Museum Center
Mary Meluso	Associate Director, Public Relations	Liberty Science Center
Jake Mendelssohn	School Program Manager	Connecticut Science Center
Jayshree Oberoi	Supervisor, Teacher Services	New England Aquarium
Dina Schipper	Director, Media Relations	Liberty Science Center
Elizabeth K. Stage	Director	Lawrence Hall of Science, U.C. Berkeley

Written questionnaire responses were obtained from all sixteen participants (4 male, 12 female). Of these respondents, two reportedly have earned a doctorate, ten have a master's degree, and four have a bachelor's degree. When asked to describe themselves, respondents used one or more of the terms listed in Table 3. Note that fifteen of the sixteen questionnaire respondents indicated that they are members of a science center/museum staff.

Table 3. Participant's Areas of Responsibility

Categories	*Responses Received*
Science center/museum staff	15
Professional science organization staff	1
Science curriculum author or developer	4
Scientist	3
College or university educator	3
K-12 educator	3
College or university student	1

Focus group participants were asked how often they watch *The NewsHour with Jim Lehrer*. Table 4 shows that three (18.8%) of the respondents watch the broadcast as often as they can and six (37.5%) watch it a few times each month.

Table 4. Frequency of Viewing The NewsHour with Jim Lehrer (N=16)

Categories	*Responses Received*
As often as I can	3
A few times each month	6
A few times each year	5
Only once or twice ever	2
I have never seen it	–

They were also asked how often they had visited the *Online NewsHour* Web site (www.pbs.org/newshour/science) prior to Lea Winerman's presentation. Table 5 shows that 43.8% of the respondents reportedly had never visited *Online NewsHour* and a similar percentage had visited the site once or twice.

Table 5. Frequency of Visiting Online NewsHour (N=16)

Categories	*Responses Received*
A few times each week	–
A few times each month	1
A few times each year	1
Only once or twice ever	7
I have never visited the site	7

Probing further, respondents were asked to specify all of the ways they have viewed/heard *NewsHour* science reports prior to Lea Winerman's presentation. Of the sixteen respondents to this inquiry, three (18.8%) had reportedly viewed *NewsHour* science reports on television and the Internet (i.e., *Online NewsHour*), eight (50.0%) had viewed them only on television, four (25.0%) had viewed them only via *Online NewsHour* streaming video, and one respondent has viewed *NewsHour* science reports on a DVD.

Findings

Research findings reported below resulted from an analysis of focus group participants' oral and written feedback. Every member of the group displayed strong interest in the project's components and in ways that their institutions can both utilize them and collaborate with MacNeil/Lehrer Productions on further development and outreach efforts. Note that broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents' actual oral and written remarks are included below. Readers are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback.

Group Discussion Feedback

Findings and quoted remarks presented below were obtained from oral comments offered by focus group participants during a post-presentation group discussion.

Focus group participants engaged in a group discussion following Lea Winderman's presentation of online project components, Franmarie Kennedy's description of current partnerships between *The NewsHour* and science centers/museums, and Arthur Johnson's summary of prior evaluation findings. Over the course of the discussion they raised questions, offered feedback, and asked suggestions regarding science center/museum use of *The NewsHour's* science reports and accompanying online resources (e.g. transcripts and lesson plans). Their transcribed remarks, which are presented below in chronological order, are divided into 13 themes that emerged from the discussion:

Video Length – The group discussion began with one participant's conjecture that while experience has led science centers to conclude that, outside of a theater, their visitors will usually not watch a video that extends for more than about two minutes, perhaps science center's should make an effort to expand their visitors' attention span. In response, a participant suggested that perhaps video kiosks should include both a short and a long version of a video science report. Another promoted the idea of showing a short segment of video and then facilitating a discussion rather than expecting visitors to passively watch a video for ten minutes. Other ideas focused on editing the videos into segments and perhaps formatting the original video in a manner that allows for easy separation into different themes or topics. One participant recommended that science centers look beyond finding ways to fit the video science reports into kiosks as they are currently being used and instead try to develop more innovative ways to incorporate the reports into their exhibit space. In order to convey the full scope and the true nature and tone of their multifaceted thoughts, participants' actual comments are included below.

- *"One of the problems we have in schools is they keep shortening the periods. And one of the reasons to have a science center is to give the kids an experience outside of the school because the schools are being so crammed with tiny two-minute instruction and activity segments. At the science center there is no bell, you can stay at an exhibit as long as you want, you can do it as many times as you want, you can do it with a group, and you can do it by yourself. You can't do that in schools anymore. At the end of the period math is over and you've got to go do something else. So, maybe even though people at science centers are going to say they want a two-minute video segment, maybe they shouldn't be asking for or creating two-minute segments because that's going to be very much like what the kids get in school. Maybe people shouldn't walk away from a kiosk after two minutes. Maybe we need to expand their attention span and not shorten it into little segments."*
- *"Perhaps there could be a button on kiosks that allows someone to select the short version or the full version of a video?"*
- *"Many of us also have programs that could show a short segment of video and then facilitate a discussion. Few of us would advocate actually having a person come to a science center and sit and passively watch a video for ten minutes, because that's something you could do at home or at your own computer. It would be preferable for me if you were actually fooling around with a hydrogen fuel cell while you're listening to Spence Michels talk about alternative fuels for cars or whatever so that you could see the connection between what they're doing and the video news discussion. You could have both shorter and longer versions of a video segment on a kiosk, but people won't stand there for a long time watching. So we wouldn't even think it was a good idea then."*
- *"I'm not saying they will stay there for ten minutes."*
- *"Maybe that's the point. The science center can cover the science and you [The NewsHour] can cover stuff other than the science – the implications. Maybe that's what the video segment should be. If you get a hydrogen fuel car, what does that mean for society?"*
- *"So since the videos are longer to begin with they could be edited in different ways. In a ten minute video there would be some content about process, science facts, etc. It would just be a question of what you would like to accompany an exhibit or activity."*
- *"That's why I think we should be able to edit longer segments or you could edit them for us."*
- *"When we're talking about editing these videos, and I think that's a really great idea, we're not all professional editors and we would want to do service to the great product you're providing. Would it be possible, for example, to have the original ten-minute story be formatted into four 2.5 minute themes so that we know the first 2.5 minute theme is dealing more with the science and the second 2.5 minute theme is dealing more with the implications and the third one is dealing with the impacts and personal stories, etc.? I'm sure the people who are producing the stories would want to have their own format. They wouldn't want to do it in this piecemeal fashion. I'm not sure if that's possible, but it would make it easier for us to know what portions we could utilize."*
- *"I'd edit if for a purpose, just like you produce the whole segment for a purpose. If we've got a narrower purpose, then who's going to edit the original story to fit the needs of an exhibit?"*

- *"Right, but that creates a process that's not sustainable or scalable. If this becomes a really successful initiative your talking about however many science centers there are in the country coming to you and saying we all like this segment, but we all want different things from it. So, you may be very quickly outstripping your capacity to edit segments and maybe one of the burdens that the science centers should bear is developing more innovative ways of using this technology content. Input into the creation process so it's purposed as closely as possible to our projects would be very helpful. But right now basically what we're doing is envisioning the kiosk that we already have on the floor and how this content would fit into it. Those kiosks aren't going to last that much longer anyway. Usually when I watch The NewsHours science reports there is an arc to the story. If you went to ask a reporter they'd probably say that's what they're trying to do. It's not that a report has to be divided into multiple two-minute segments, but if you could let us know what was going on in each portion of the story then that would be something that we could use."*

Separating Audio From Video – A discussion participant who manages a science center's planetarium and writes the scripts for its shows expressed a desire to use the video portion of *The NewsHour's* science reports, but remove the audio so that the show's narrator can read the prepared script to the audience. The following is the actual statement:

- *"I don't run an exhibit with a kiosk. I manage a planetarium and I'm wondering how locked your stories are that if we do use it and we have the ability to edit it, must we keep the audio with the video? In most cases I would be interested in incorporating some video that I may not have been able to find elsewhere that seems to accent my theme or topic well. I write a script and I have a narrator tell my story, but I often need some visuals to complement that. I wonder if you would be opposed to me tearing your video apart for my own benefit. We would certainly give you credit at the end of the presentation."*

Input Into Story Selection – A request was made for science centers to have input into the selection of science report topics, as follows:

- *"Would you treat stories that we want you to treat? Would you take suggestions for stories?* [Lea Winerman welcomed story ideas and discussed avenues for providing input.]"
- *"Something we've been grappling with in the San Francisco Bay Area with respect to a KQED project called Quest, which is a series that explores the stories behind Bay Area science, nature and environmental issues, is what stories should be covered, which scientists should be involved, and what are the links to science center resources around the country."*

Being Current – Science centers reportedly have a need to provide their visitors with current information. It was observed that *The NewsHour's* science reports could meet this challenging need, as illustrated in the following exchange of ideas:

- *"We currently take a few months to develop an exhibit, but one of the things that science centers in particular are moving towards is being current. For example, the Ontario Science Centre has a Weston Family Innovation Centre and they've got a maximum 72-hour limit on all the information that's placed in that space. Some items have a 24-hour limit. There are various widescreen TVs, RSS feeds, and hourly live presentations. Our staff has a week to develop content for that space."*
- *"I think this is actually one of the advantages of a partnership between science centers and The NewsHour. You have this wealth of content that we don't necessarily have to develop, but we could just repurpose and reuse. So right now we're working you into the old system. But as we move forward we'll have a greater need for timely reports."*
- *"One of the big challenges for science centers and science museums across the country is just staying current. Finding a way to keep exhibitions up-to-date for the four to five year stretch that it's going to be in a center or on the road is going to be a huge, huge challenge. So, if we can find people to partner with in the media to keep that information up-to-date would be fabulous."*

Links to Science Center Resources – One focus group participant suggested that science reports include links to science center resources for additional information and related local stories.

- *"You could point your producers to science centers where they would find exhibits or other resources that would help people understand your stories better or perhaps find a local version of a story."*

Benefits of RSS Feeds – Incorporating content from RSS feeds into a science center's Web site, exhibits, and roving explainer/activity carts can provide timely news and information that reduces the time required to maintain their site and keep their exhibit area current.

- *"The model that's working really well for us is something we're doing with Science Friday, a weekly science, technology, and environment television and radio news program and Web site. It's an RSS feed, so every week we have new audio and video automatically added to our site with related content. That makes it really easy for us because we don't have to give as much time to maintaining our Web site as we did before. And it also let's us provide that content out on the floor when there's something particularly relevant to one of our exhibition themes. We can role it out as an Internet piece on one of our rovers. So it's constantly available on our Web site with minimal work for us and they're sending it out to lots of sites. We have a dedicated space on our Web site that's constantly changing and we can role it out when it's relevant on the floor."*

Science Report Transcripts – The positive value that providing transcripts of video science reports offers *Online NewHour* visitors is reinforced by the following feedback:

- *"One of the things that would help me is, it doesn't have to be a transcript of the video, but if there were a summary of facts contained in the science report then I wouldn't have to sit there and take notes. A PDF file that would accompany the report would be helpful."* [Note: Lea Winerman explained and demonstrated that all of the video reports do have transcripts and many also have teacher lesson plans correlated with National Curriculum Standards available on *The NewsHour* Web site. This feature was greatly appreciated by all of the focus group attendees.]

Suggestions For Hands-on Activities – Providing accompanying hands-on activities along with *NewsHour* science reports would not only be beneficial for teachers, students, parents, young children, and the general public, it would also enable science centers to extend their public contact, as expressed by the following remarks:

- *"It would be very useful to include hands-on activities that teachers both inside and outside of the science center can do with their students."*
- *"Have you experimented with any ideas of providing ideas for simple, short activities on a Web site that a parent, child, family, or any science center visitor can use at home in order to extend the public contact?"* [Note: Lea Winerman discussed ideas that have been considered by the *Online NewsHour* staff.]

Intended Age Range for Activities – Feedback obtained from focus group participants suggests that the appropriate age range for online activities might depend on whether science report viewers are primarily members of *The NewsHour's* television or Internet audience. The following discussion conveys a perception that a variety of online activities accompanying science reports should be developed for both an older television audience and a younger Internet audience:

- *"The demographics for the KQED Quest broadcast are in an age range that is older than who would have children. The broadcast drives the traffic to the Web, so they might need grandparent activities more than parent-based activities for their television audience who visit the site."*
- *"That's a good point."*
- *"The Quest radio audience is actually younger than its television audience and its Web audience is younger still, so they're getting to the Web site not by way of the broadcast media.*

So you have to do a little analysis of who's going to your Web site to figure out for whom you should be providing resources."

- *"I'm thinking about visitors who come to our science center's Web site, so we're driving our demographics rather than The NewsHour's demographics, but still pushing visitors to The NewsHour's Web site for additional resources."*
- *"This is an important point in terms of how you allocate your resources and how you sift through our suggestions. Maybe the parents of little children is something you might want to increase because that might increase the viewership of your broadcast. Like us, you have a mission to reach people, so you have a marketing strategy underlying what you produce."*
- *"Have you thought about doing the elementary grades? Why are lessons only for middle and high school students?"*

Access to Science Report Files – One focus group participant wanted to know the easiest method for downloading *NewsHour* science report files for use and possible editing at the science center.

- *"Will the video reports that you create be available on a server that's available for us to access or do we have to contact you to ask for them? What would be the easiest method for us to download a report for use and possible editing at our science center?"* [Note: Lea Winerman explained the process of accessing the science reports and the procedure for obtaining editable versions of the reports.]

Advance Notice – An inquiry was made about how far in advance a science center could be notified about the development and release schedule for upcoming *NewsHour* science reports.

- *"How far in advance can we know when your going to be developing a science report? We have a weekly newsletter, so if we knew something was coming we could announce it in the newsletter."* [Note: Lea Winerman discussed daily broadcast scheduling and the range of timeframes for report development.]

Archive for Science Center Edits – A suggestion was made for *Online NewsHour* to contain an archive of video science reports that have been edited by science centers. It was also recommended that a list of the edited videos include information about each video's length, its target audience, if it was intended for teachers, how it was used in the science center, and the theme of the edited report.

- *"If a museum edits one of your science reports and this edited version may be very useful for another museum, would it be possible for your site to have an archive of the edited versions and that lists their length, the target audience of the segment, if it was intended for teachers' use in education, if it was used in an interactive exploration in the science center, and the theme of the report?"* [Note: Lea Winerman offered ideas about having a separate Web site for science centers or a science center accessible area of *Online NewsHour* that would serve as a resource for these types of needs.]
- *"With that in mind science centers could also share their ideas for floor explainers and floor activities that your center might not be developing, but somebody else might."*

Sharing Resources – It was pointed out that science centers have associations with scientists conducting research around the world who may be of benefit to the production of *NewsHour* science reports. Consequently, it would be beneficial for both *The NewsHour* and science centers to keep avenues of communication open, as expressed below.

- *"We have scientists all over the world doing research, so if we know that you're in Mongolia covering climate change, for example, we can hook you up with an Academy scientist who's researching climate change in Mongolia. So our knowing where you are and what your topics are might be beneficial to you. It would be useful for both of us to keeps avenues of communication open."*

Questionnaire Feedback

Findings and quoted remarks presented below were obtained from written responses to a post-presentation questionnaire.

Overall Rating of The NewsHour's Science Reports. On average, the sixteen focus group participants who responded to the post-presentation questionnaire gave *The NewsHour's* science reports an overall rating of 4.50 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). As shown in Table 6, questionnaire respondents rated the science reports as either "Very Good" (50%) or "Good" (50%).

Table 6. Overall Rating of The NewsHour's Science Reports

Variable	*N*	*Categories*	*Responses* Number (%)	*Mean Rating*
Overall Rating	16	Very Good	8 (50.0%)	
		Good	8 (50.0%)	**4.50**
		Average	–	
		Poor	–	
		Very Poor	–	

As a follow-up question, respondents were asked to describe their overall reactions to *Online NewsHour's Science Reports*. Responses to this inquiry, included below, all convey positive perceptions.

- *"I had seen some of the reports before, but never knew about the rich content of the Web site until being invited to this focus group breakfast."*
- *"I'm a fan. I appreciate the editorial decision to do fewer, but far more in-depth and nuanced stories."*
- *"They were very well done and informative. They just needed to be a little more succinct to work in my programs."*
- *"Good – considering the audience you are addressing."*
- *"Good for older audience. High quality news science segments."*
- *"Very good stories. Presented clearly and in an engaging manner."*
- *"Important as one of the few reliable and reputable sources for science information for the public."*
- *"There seems to be many opportunities for partnering. Good resource for museums and their audiences."*
- *"Very positive. In-depth reporting is excellent."*
- *"Fits well with our museum's mission to inform the public about science/technology and keep them up-to-date."*
- *"I have an overall favorable impression of The NewsHour and its science reports."*
- *"Very useful for science educators as a tool for various activities."*
- *"Perfect resource for our museum to begin utilizing to make current science more accessible. Starting point for us will be Web site link."*
- *"Would provide an excellent supplement to our exhibits and activities."*
- *"The access to reports is good as well as the content. I would like to explore the site in more depth to gain better familiarity with resources and reports."*
- *"I have not watched enough to respond."*

Asked if they would like to receive e-mail alerts to upcoming *NewsHour* science broadcasts, all sixteen of the focus group participants said that they would.

Key Objectives That Should Be Met by the Science Reports. Focus group participants were asked to specify key objectives that they think should be met by *The NewsHour's* science reports. The following are their broad ranging recommendations:

- *"Consider how you can use these reports to educate the public on the scientific method and why scientists' ability to change and integrate new information is the strength rather than evidence of its unreliability."*

- *"Making connections with science through other disciplines. How these stories effect other areas."*
- *"Inform and be truly balanced, which is incredibly difficult."*
- *"To be slightly ahead of the game as you would for any news story. Accuracy. Properly geared in terminology and scope to your audience's capacity."*
- *"Human interest, scientific facts, and on-the-scene reporting."*
- *"Inform with current and accurate information. Identify and correct misconceptions."*
- *"Current factual information to help the general public in making scientifically literate decisions."*
- *"Science updates around the world. Programs, success stories, and action work around the world. Education updates."*
- *"Help the public understand the process and inspiration of science."*
- *"Present unbiased reporting, but emphasize the most widely accepted scientific view rather than giving equal weight to all views just to appear unbiased."*
- *"Be clear and concise. Explain the impact of issues covered in a report and why they are important. Encourage students to ask questions about the content which will inspire them to explore for themselves."*
- *"None at the moment."*

Interest in Access to Online NewsHour Resources. When asked if their science center/museum would be interested in linking to *Online NewsHour* to offer public access to science journal reports, video clips, and other resources, all sixteen focus group respondents indicated that it would. Three respondents offered the following additional written remarks:

- *"I work with a traveling exhibit service so linkage would be topic/exhibit-specific."*
- *"If 'linking to' means direct access by staff."*
- *"I would be willing to incorporate it into teacher professional development that we do. As for exhibit development, that is not my call, but I would suggest it."*

Interest in Science Center/Museum Use of Science Reports. Given the availability of *NewsHour* science reports in a 3-4 minute video format, all sixteen focus group indicated that their science center/museum would have an interest in using them. When asked in what capacity the videos would be used, ten expressed a desire to include them on their institution's Web site, nine respondents said they would show the videos at public sessions, and seven indicated that they would be displayed on kiosks. Five respondents identified other uses for the videos in their following comments, such as starting or ending "sessions" in school, for staff professional development, outreach programs to schools, inclusion in other electronic media, and use in teacher workshops:

- *"Part of school programs, to start or end sessions."*
- *"Staff professional development."*
- *"Outreach programs to schools."*
- *"Among other current topics presented by electronic media."*
- *"Teacher workshops."*

What Materials or Activities Could Be Developed Jointly? When asked to describe "turnkey" materials (e.g., video, Web resources, curricula, etc.) or shared activities that *The NewsHour* might develop in partnership with participants' institutions, they offered the following ideas which focus on materials associated with curricula development and teacher resources, hands-on student and family activities, video and Web site production, traveling exhibits, and community science forums:

- *"Curricula, hands-on activities. Tryscience.org has numerous hands-on activities."*
- *"Video and Web."*
- *"Curricula focused on a science fusion, maybe the science behind art, that can be incorporated into a 45 minute science program."*

- *"Copy of graphs/data/information used in reports."*
- *"Activities that tie into reports. Traveling exhibits that tie into reports. Community science forums that tie into reports."*
- *"Curricula, Web resources, video."*
- *"Shorter segments for curricula that can be used in public and school settings."*
- *"Curricula and family activities."*
- *"Likely all examples with emphasis on standalone video."*
- *"Videos, curriculum."*
- *"I can assist with curricula and teacher resources."*

Suggestions for Partnership Opportunities. Focus group participants were asked to offer additional ideas for partnership opportunities between *The NewsHour* and science centers/museums. The following is their broad ranging written feedback to this inquiry:

- *"Having science museums give back with related ideas and hands-on activities. Use the ASTC informal science listserv to notify about science reports and ask science-based questions."*
- *"Segments focused on careers in science would be useful."*
- *"For NewsHour to define for us who NewsHour is, missions and focus, so that we can tailor our ideas and suggestions to support that."*
- *"Work together for grant opportunities."*
- *"Develop a program around how reports are produced as a way to help the public think about the sources in the media that science information is available from."*
- *"The Academy of Natural Sciences has world renown scientists studying all over the world that would be great resources. Also, Academy educators are experts in turning this research into accessible information for pre-kindergarten to sixth grade if you ever want to expand lessons to that age group."*
- *"Work on topics together is a generous offer!"*
- *"Science education, stories, and news."*

Barriers to Partnership. Focus group participants were asked to describe any barriers to forming a partnership between *The NewsHour* and science centers/museums. They offered the following feedback in response to this inquiry, which focus on the time required to watch and integrate reports into their programs and exhibits, the technical capacity of their science center/museum, and issues related to "partner vs. one-way" responsibilities:

- *"Time. We must take the time to watch and integrate segments into our programs and exhibits."*
- *"Technical capacity at museums."*
- *"Unknown as yet."*
- *"Experience with KQED – partner vs. one-way."*

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Focus Group Study of
The NewsHour Science Reports

Performed at the Donald Danforth Plant Science Center
in St. Louis, Missouri on April 22, 2009

Report for

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Focus Group Study of

The NewsHour's Science Reports

Executive Summary

May 1, 2009

PROJECT DESCRIPTION – The findings summarized here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. The reports appear on *The NewsHour with Jim Lehrer* television broadcasts and are archived as streaming video available on the *Online NewsHour* Web site (www.pbs.org/newshour/science), which includes additional resources such as audio Podcasts, transcripts, teacher lesson plans, background reports, slideshows, and interactives.

RESEARCH GOALS AND ISSUES – The general purposes for this study are to inform decision making about the content, presentation design, and usability of the science reports from the perspective of high school students. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. Toward these ends, both descriptive and explanatory findings are reported. This summary of findings contains a depth and breadth of feedback provided by focus group participants about current conceptions of *The NewsHour's* science reports. This information was obtained from eleven high school students and accompanying parents and teachers.

RESEARCH PROCEDURES – A one-hour focus group session was performed for this evaluation study on April 22, 2009 with a sample of eleven randomly selected high school students enrolled in urban and suburban schools located in the St. Louis, Missouri region. They were accompanied by seven parents and four teachers who offered feedback about the use of *NewsHour* science reports by their children/students.

Focus group participants began the evening by viewing a one-hour panel discussion focusing on plant science and its impact on the global economy, a *NewsHour Spotlight City* event hosted by Judy Woodruff, Senior Correspondent for *The NewsHour with Jim Lehrer*, which took place in the AT&T Auditorium at the Donald Danforth Plant Science Center in St. Louis, Missouri. Immediately following this event, which has been broadcast by PBS station KETC to residents throughout the St. Louis region, focus group participants (i.e., students, parents, and teachers) met in a conference room to view Franmarie Kennedy's presentation of *Online NewsHour* components and a *NewsHour* science report (*Students, Scientists Build Biological 'Machines'*). After viewing the presentation, students engaged in a group discussion moderated by Arthur Johnson and provided written responses to a printed questionnaire.

DEMOGRAPHICS – As previously specified, focus group research obtained feedback from eleven randomly selected high school students (5 female, 6 male) enrolled in urban and suburban schools located in the St. Louis, Missouri region. Of these eleven students, three are black/African American, one is Asian, one is Hispanic/Latino, and the remaining six are white/Caucasian. In addition, seven parents and four teachers accompanied the students and offered feedback about the use of *NewsHour* science reports by their children/students. In addition to offering oral feedback during a group discussion, the students also offered written responses to a printed questionnaire. Eight of the students provided their contact information and indicated that they would like to be invited to participate in further *NewsHour* evaluation research and/or development.

SUMMARY OF FINDINGS – Research findings summarized below resulted from an analysis of focus group participants' oral and written feedback. Every member of the group displayed strong interest in the project's online components and in ways that they can utilize archived *NewsHour* science reports. Note that broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents' actual oral and written remarks are included in the report. Readers

are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback. Additional finer grained findings are also contained in the report.

Group Discussion Feedback

Findings and quoted remarks presented below were obtained from oral comments offered by focus group participants during a post-presentation group discussion.

The focus group discussion began with an inquiry into television viewing habits and use of the Internet. Of the eleven participating students, nine said they don't watch television at all and the other two commented that they watch one hour or less each day. In contrast, all of them reportedly spend a few hours per day exploring the Internet. None of the students watch news programs on television and only two of them had heard of *The NewsHour with Jim Lehrer*, but they have not watched the broadcast.

Four of the students were familiar with the *Science Reports* section of *Online NewsHour* prior to the focus group session. After pointing out to the other students that the science reports are broadcast on *The NewsHour* and then archived on *Online NewsHour* for people to watch at their convenience, the students were asked if they would be interested in viewing the science reports online. There was a unanimous response from all eleven students that they would. There was also a consensus of opinion among the high school students that the reports are useful for class assignments and homework.

The following key points emerged when students were asked if there was anything they saw or heard in the panel discussion that proceeded the focus group session that they found to be particularly interesting:

- Multiple points of view were represented;
- Panelists were well informed;
- Research, nutrition and education are connected;
- Economic stimulus package neglected Dept. of Agriculture.

The following key perceptions emerged when students were asked if there is anything about the *NewsHour* science report they had just viewed that is particularly interesting:

- The narrator's positive appeal;
- A welcome focus on a single topic;
- A desire for details;
- Enjoyment of seeing knowledgeable young people/peers;
- Appreciation for clear explanations of science;
- A challenge to thinking;
- Increased motivation to know more;
- An ample amount of interesting information;
- Topic for further discussion;
- Usefulness of science content.

Asked how much value they place on being aware of current science news, student respondents attribute strong positive value to being news literate, especially when the information has relevance for them personally. When asked if viewing a *NewsHour* science report motivates them to want to know more about the topic, all of the focus group students responded by saying "Yes." As a follow-up question, students were asked what could be done to increase their motivation to know more about the content of a science report. Key suggestions include:

- Promote awareness and use of reports in schools;
- Make reports relevant to high school students;
- Make reports short [5-15 minutes];
- Provide links to more in-depth information.

When asked how we could make *NewsHour* science reports more interesting, respondents offered ideas that include the following key suggestions:

- Summarize what's going on in the field of biotech;
- Support integration of science news into school curriculum;
- Describe relevance of science news to students' lives;
- Provide additional online information of relevance to students;
- Provide more in-depth information in science news broadcasts;
- Update science news and reports frequently.

When asked to describe what they like most about the *NewHour* science report(s) they've viewed, students' responses included the following preferences:

- Firsthand interviews with actual scientists;
- Optimistic reports that highlight positive impacts;
- Accessibility of reports online;
- Comprehensibility of reports for high school students;
- Inclusion of knowledgeable young people in reports;
- Care demonstrated by participants in reports/presentations;
- Descriptions of research accomplishments;
- Updates on reports.

In contrast to the previous question, students were asked to describe what they like least about the *NewHour* science report(s) they've viewed. Nothing negative about the science reports reportedly stood out in their thinking. They did, however, offer critical comments about the panel discussion that include the following dislikes:

- Alternative points of view were not explored;
- Discussion focused on lack of attention given to plant science rather than to its developments;
- Too few audience questions were addressed;
- Not enough details/depth;
- Not comprehensible enough for the average person.

A request was made for students to describe how they look/search for information about a topic that interests them. The following strategies emerged from their responses:

- Clicking on a Web site's RSS icon to access feeds/channels;
- Support provided by teachers;
- Information provided by the school;
- Video sharing on Web sites such as YouTube;
- Social-networking Web sites such as Facebook.

When asked if there was other feedback they would like to offer, four students commented that they would like to see more young people included in the science reports. The following additional suggestions were put forward by five other students:

- Make reports relevant to viewers' lives;
- Make the science reports 10-15 minutes;
- Provide 5-minute introductory videos with links to full video reports;
- Place long science reports early in a broadcast and shorter ones later;
- Have multiple reports, each covering a different perspective on a single topic.

Expanding the discussion, parents and teachers were asked to describe their perceptions of the *NewsHour* science report(s) they've viewed. Since their broad ranging responses to this inquiry defy being summarized, you are encouraged to read their actual remarks on Page 9 of the report in order to grasp the true nature and tone of the feedback.

Teachers often report that they are constrained by state curriculum standards/frameworks and school district teaching guidelines. When asked if they have the flexibility to incorporate use of *NewsHour* science reports into their curriculum, two respondents offered feedback indicating that they personally have such freedom as long as the reports are relevant to their instruction.

Questionnaire Feedback

Findings and quoted remarks presented below were obtained from written responses to a post-presentation and post-discussion questionnaire.

When asked how much they know about science news on a daily basis, students rated their knowledge, as 2.46, on average, using a four-point scale ranging from 1 (I know nothing) to 4 (I know a lot). More than half of them (54.6%) reported generally knowing "a little" about science news and a little over a third (36.4%) self-reported knowing "a moderate amount."

The Internet is the most preferred and highest rated science news source for these students and television is generally their fourth choice. Their favorite news networks reportedly include CNN, Fox, MSNBC, VH1, BET, and Science Channel networks. Their favorite news programs include the Colbert Report, CNN Situation Room, and Comedy Central. The students were also asked to identify which information resources, other than books, they use for science homework. All eleven said they use the Internet, one of them also reported using television, and four responses included sources such as magazines, NPR radio, textbooks, science journals, and "my parents." While all of the students reportedly have visited a science center/museum, all except one of the eleven students said they enjoy the experience.

Asked which science resources they think should be contained on the *Online NewsHour* Web site, the eleven students each offered suggestions contained on Page 11 of the report that defy summarization. On a similar note, asked if they would use PowerPoint presentations if they were made available on *Online NewsHour*, five students responded by saying "Yes," a similar number said "Maybe" and one said "No."

When asked how important they think it is to keep up with science news and events, nearly three-fourths of them (72.7%) said that it is "Very Important." As a follow-up question, the students were asked if television news programs contain information about science that is useful for them to know. Two-thirds said "Yes" and the other third said "No." Asked if news about science has an impact on their life, ten students said that it does and one said that it doesn't. Similarly, when asked if they would like to be more informed about science news/events than they already are, ten said "Yes" and one said "No."

On average, the eleven focus group students gave *The NewsHour's* science report they viewed in the presentation an overall rating of 4.64, using a five-point scale ranging from 1 (Very Poor) to 5 (Very Good), with about two-thirds (64.6%) rating it as "Very Good" and a little more than a third (36.4%) giving it a "Good" rating.

Students were asked if they currently participate in online conversations (e.g., instant messages, blogs, etc.). A total of nine students said they don't and two indicated that they do. They were then asked to rate how useful it would be to have a *NewsHour* science news Web site for students that would include opportunities for them to communicate with other students around the country/world about issues addressed in the *NewsHour* science reports. On average, they rated the usefulness of such an interactive site as 4.46 on a five-point scale ranging from 1 (Not Useful) to 5 (Very Useful), with about half (45.5%) rating it as "Very Useful" and a similar percentage (45.5%) giving it a "Moderately Useful" rating. As a follow-up question, they were asked if they would participate in conversations that are a feature of such an interactive site. Of the eleven respondents to this inquiry, seven said they would, three said they might, and one indicated that she wouldn't.

When asked to describe the type of science news/events that students would like to receive in-depth coverage, the eleven students offered the broad ranging feedback located on Page 12 of the report. Focus group students were also asked for suggestions that would enable *NewHour* broadcasts and *Online NewsHour* to do a good of meeting their learning/information needs. Their responses are included on Page 13 of the report.

Focus Group Study of

The NewsHour Science Reports

Performed at the Donald Danforth Plant Science Center
in St. Louis, Missouri on April 22, 2009

May 1, 2009

Project Description

The findings reported here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. The reports appear on *The NewsHour with Jim Lehrer* television broadcasts and are archived as streaming video available on the *Online NewsHour* Web site (www.pbs.org/newshour/science), which includes additional resources such as audio Podcasts, transcripts, teacher lesson plans, background reports, slideshows, and interactives.

Research Goals and Issues

The general purposes for this study are to inform decision making about the content, presentation design, and usability of the science reports from the perspective of high school students. An effort was also made to identify mid-course adjustments and corrections that can help insure the project's success. Toward these ends, both descriptive and explanatory findings are reported. This summary of findings contains a depth and breadth of feedback provided by focus group participants about current conceptions of *The NewsHour's* science reports. This information was obtained from eleven high school students and accompanying parents and teachers.

The researcher (Dr. Arthur Johnson, Director of Edumetrics) looked for patterns in the quantitative and qualitative data specified in the following section of this summary report. Communication between the evaluator and project staff took place at the outset of research in order to review developments and agree upon specific evaluation issues. Toward these ends, in addition to obtaining demographic and background information, research methods focused on informing our understanding about the following key issues:

1. How much do participating students reportedly know about science news on a daily basis?
2. What are the ways they get science news information and how useful are each of these ways?
3. How important is it for them to keep up the science news and events?
4. Would they like to be more informed about science news/events than they already are?
5 If they watch television news programs at home, what are their favorite news programs/channels? Why?
6. Do television news programs contain useful information about science news? If so, in what way(s) is it useful?
7. What information resources, other than books, do they use for science homework?
8. How do they rate the *NewsHour* science reports, overall?
9. What resources should be contained on the *Online NewsHour* Web site that would help them complete school assignments?
10. Would they use PowerPoint presentation if they were available on the Web site?
11. How useful would it be to have a *NewsHour* science news Web site for students that included opportunities for them to communicate with other students around the country/world about issues addressed in the science reports?
12. Would they participate in conversations if they were a feature of the Web site?
13. Do they currently participate in online conversations (e.g., instant messages, blogs, etc.) related to science?
14. Do they enjoy visiting science centers/museums?
15. What type of science news/events would they like to have covered in depth?
16. What suggestion do they have that would enable *NewsHour* broadcasts and/or *Online NewsHour* to do a good job of meeting their learning needs?
17. What are their television and Internet usage habits?

18. Is there anything they saw or heard in the panel discussion that proceeded the focus group session that they found to be particularly interesting?
19. Is there anything about the *NewsHour* science report(s) they've viewed that is particularly interesting?
20. How much value do they place on being aware of current science news?
21. Does viewing the science reports motivate them to want to know more about the topic?
22. What could be done to increase their motivation to know more about the content of a report?
23. How could we make the science reports more interesting to high school students?
24. Is the information contained in the science reports be useful for students in school?
25. What to the students like most about the science reports?
26. What to they like least about the science reports?
27. How do they look for information about a topic that interests them.?
28. Is there anything else about the science reports and/or other *Online NewsHour* resources the they would like to share?
29. What are teachers' and parents' perceptions of the *NewsHour* science reports?
30. Do teachers have the flexibility to incorporate use of the science reports into their curriculum?

Research Procedures

A one-hour focus group session was performed for this evaluation study on April 22, 2009 with a sample of eleven randomly selected high school students enrolled in urban and suburban schools located in the St. Louis, Missouri region. They were accompanied by seven parents and four teachers who offered feedback about the use of *NewsHour* science reports by their children/students.

Focus group participants began the evening by viewing a one-hour panel discussion focusing on plant science and its impact on the global economy, a *NewsHour Spotlight City* event hosted by Judy Woodruff, Senior Correspondent for *The NewsHour with Jim Lehrer*, which took place in the AT&T Auditorium at the Donald Danforth Plant Science Center in St. Louis, Missouri. Immediately following this event, which has been broadcast by PBS station KETC to residents throughout the St. Louis region, focus group participants (i.e., students, parents, and teachers) met in a conference room to view Franmarie Kennedy's presentation of *Online NewsHour* components and a *NewsHour* science report (*Students, Scientists Build Biological 'Machines'*). After viewing the presentation, students engaged in a group discussion moderated by Arthur Johnson and provided written responses to a printed questionnaire.

Applying a modified nominal group technique, the session was divided into the following six activities:

- Statement of project goals and research issues;
- Presentation of *Online NewsHour* features and a *NewsHour* science report;
- Silent generation of ideas by participants regarding research issues;
- Writing down ideas;
- Group discussion of participants' ideas;
- Written response to post-presentation questionnaire;

This approach permitted participants to comment after reflection on Franmarie Kennedy's presentation and on their learning needs for science news resources. In conjunction with a group discussion, a printed questionnaire was employed to obtain a depth and breadth of both quantitative and qualitative feedback and to circumvent the influence of outspoken participants.

The feedback obtained informs our understanding about the efficacy of *The NewsHour's* science reports for high school students. This methodology also provides insights into planned and unplanned outcomes of project implementation. Such information will be considered by the project's designers and producers along with other data in order to make decisions about the final complexion of the project's various science-based broadcast and Web-based components, especially *NewsHour* science reports.

Demographics

As previously specified, focus group research obtained feedback from eleven randomly selected high school students (5 female, 6 male) enrolled in urban and suburban schools located in the St. Louis, Missouri region. Of these eleven students, three are black/African American, one is Asian, one is Hispanic/Latino, and the remaining six are white/Caucasian.
In addition, seven parents and four teachers accompanied the students and offered feedback about the use of *NewsHour* science reports by their children/students. In addition to offering oral feedback during a group discussion, the students also offered written responses to a printed questionnaire. Eight of the students provided their contact information and indicated that they would like to be invited to participate in further *NewsHour* evaluation research and/or development. This information will be given directly to project staff rather than published here in order to protect students' privacy rights.

Findings

Research findings reported below resulted from an analysis of focus group participants' oral and written feedback. Every member of the group displayed strong interest in the project's online components and in ways that they can utilize archived *NewsHour* science reports. Note that broad ranging responses to open-ended questions sometimes defied being quantified or summarized. Consequently, in order to convey the true nature and tone of the feedback, respondents' actual oral and written remarks are included below. Readers are encouraged to examine all of these quoted comments to acquire a deeper understanding of the findings summarized here and to glean further insights from additional ideas expressed in their actual feedback.

Group Discussion Feedback

Findings and quoted remarks presented below were obtained from oral comments offered by focus group participants during a post-presentation group discussion.

As previously specified, focus group participants engaged in a group discussion moderated by Arthur Johnson following Franmarie Kennedy's presentation of online project components and a *NewsHour* science report (*Students, Scientists Build Biological 'Machines'*). Over the course of the discussion they offered feedback and suggestions regarding the science report(s) and panel discussion. Their transcribed remarks, which are presented below in chronological order, are divided into eleven themes that emerged from the discussion.

Television & Internet Usage – The group discussion began with an inquiry into television viewing habits and use of the Internet. Of the eleven participating students, nine said they don't watch television at all and the other two commented that they watch one hour or less per day. In contrast, all of them reportedly spend a few hours each day exploring the Internet. None of the students watch news programs on television and only two of them had heard of *The NewsHour with Jim Lehrer*, but they have not watched the broadcast. Four of the students were familiar with the *Science Reports* section of *Online NewsHour* prior to the focus group session. After pointing out to the other students that the science reports are broadcast on *The NewsHour* and then archived on *Online NewsHour* for people to watch at their convenience, the students were asked if they would be interested in viewing the science reports online. There was a unanimous response from all eleven students that they would.

Interest in Panel Discussion – Students were asked if there was anything they saw or heard in the panel discussion that proceeded the focus group session that they found to be particularly interesting. Key points of interest that emerged from this inquiry included:

- Multiple points of view were represented;
- Panelists were well informed;
- Research, nutrition and education are connected;
- Economic stimulus package neglected the U.S. Department of Agriculture.

In order to convey the full scope and the true nature and tone of the four respondents' multifaceted thoughts, their actual comments are included below.

- "I really like how they brought in not only scientists but also a farmer and different specialists from the field to see the impact that different parts of plant science are having. We heard more than just the scientists' view of the impact – multiple angles.
- "I agree with that and appreciate that they had more of an open discussion. Usually you have a reporter going out and bringing back what they think is pertinent. This discussion was open news that we heard straight from people who are in the business of plant science."
- "I like the information they presented about the transfer of lab research to applications in nutrition and education and how these things are all connected somehow."
- "I thought it was interesting how the discussion panel broke down how much the stimulus package gave to the National Institutes of Health and the National Science Foundation, but gave nothing to the U.S. Department of Agriculture."

Interest in NewsHour Science Reports – Students were asked if there is anything about the *NewsHour* science report they had just viewed that is particularly interesting. Key perceptions that emerged from this inquiry included:

- The narrator's positive appeal;
- A welcome focus on a single topic;
- A desire for details;
- Enjoyment of seeing knowledgeable young people/peers;
- Appreciation for clear explanations of science;
- A challenge to thinking;
- Increased motivation to know more;
- An ample amount of interesting information;
- Topic for further discussion;
- Usefulness of science content.

These perception are expressed more fully by respondents' actual following remarks:

- "The narrator has a personality that attracts people to the story and doesn't bore them."
- "It's clearly about one topic, but usually you just hear a list of different headlines and cruise by the topics quickly and never really delve into them like they did in the report you just showed us."
- "I think it's important that they go into detail about the actual science instead of just saying we're creating this thing that will use bacteria to create biofuel. I think it would be helpful if they explained, at least a little bit, how it actually does that. Otherwise I would wonder what does that mean to me?"
- "I especially like seeing knowledgeable young people show their research and discuss their projects. It encourages me to do similar things in school and be more active in science."
- "I like how clearly they explained the science involved in their work. They spoke at us and not down to us. I like to see competent role models like the students in your report."
- "It challenged my thinking. I made me what to know more about building biological machines. It's really interesting."
- "It contained a lot of information without being boring."
- "It gave me something to think about and talk about with my friends. I'd like to see more reports."
- "It was all interesting, but mostly it had information I can use."

Perceived Value of Science News – Asked how much value they place on being aware of current science news, respondents attribute strong positive value to being news literate, especially when the information has relevance for them personally, as expressed by their following remarks:

- "I think it's very important because I don't want to be unaware of what's going on. It's all going to have an impact on my life and I want to be able to do something about the things that create problems."

- "The reason I feel it's important is because I don't think people should be participating in a discussion unless they actually know something about the topic. So, I don't want to have opinions because my parents said so or because I'm liberal or conservative. I want to have a point of view based on actual knowledge of what's happening."
- "It's important if it relates to what I need to know and can use in school."
- "I personally think it's very important."

Motivation to Know More – When asked if viewing a *NewsHour* science report motivates them to want to know more about the topic, all of the focus group students responded by saying "Yes." As a follow-up question, students were asked what could be done to increase their motivation to know more about the content of a science report. Key suggestions include:

- Promote awareness and use of reports in schools;
- Make reports relevant to high school students;
- Make reports short [5-15 minutes];
- Provide links to more in-depth information.

These suggestions are expressed more fully by the following remarks:

- "Make the schools more aware that your science reports are available for us to see. If this information were available to us in school we would be glad to take advantage of the opportunity to learn more about what's happening in science."
- "Make it relevant to me personally. What does the information mean to my life? How can I use it? If you can show me that, then I'm interested to know more."
- "Make it short with links to more in-depth information on the Internet."

Increasing Interest Level – Asked how we could make *NewsHour* science reports more interesting, respondents offered ideas that include the following key suggestions:

- Summarize what's going on in the field of biotech;
- Support integration of science news into school curriculum;
- Describe relevance of science news to students' lives;
- Provide additional online information of relevance to students;
- Provide more in-depth information in science news broadcasts;
- Update science news and reports frequently.

These suggestions are drawn from the following remarks:

- "I personally think you should produce a compilation of all the really cools things that are happening in the field of biotech."
- "I wish the news was more integrated into the school curriculum. For example, there could be a class on current events rather than history, because that's all retrospect and we know that history repeats itself. So how can be make that connection with the news right now?"
- "It would be more interesting for me if I could see how the story relates to me or to other young people."
- "Perhaps there could be additional information on the Web site that makes a news report relevant to people who are young like me."
- "I wish they would go into more detail in news stories on television. News stories on CNN, for example, seem to repeat themselves every ten minutes rather than covering the news in-depth. The news you heard ten minutes ago is the same news you'll hear in another half-hour. I wish the news would be expanded upon like you do in your science reports."
- "The news on TV can be sort of like a hook and then you go to the Internet so you can read more about it. On the Internet you can spend as much time as you want viewing and researching news."
- "Our generation expects to get news and information instantaneously. I often sit at a computer checking Web sites for news updates – even when there aren't any. Update the news and science reports frequently."

Rather than offering a suggestion, one respondent explained that for him the problem isn't level of interest, but limitations on his free time, as expressed in the following comment:

- "I don't really have a solution, but what I see is the problem. The reason why I don't get more interested is because everything I'm doing in school and after school doesn't leave me with even half an hour to look at news without taking time away from studies or from something else I need to do. I would like to keep up with the news, but I don't have that ability."

Usefulness of Science Reports – When asked if the information contained in *NewsHour* science reports is useful for them in school, there was a consensus of opinion among the high school students that the reports are useful for class assignments and homework, as expressed by their following remarks:

- "I think it would be a good resource."
- "I would just add that having the reports online is the only way that I would be able to see them. News isn't really a part of the curriculum, but we are expected to be aware of what's going on in science. So yes, the information in your reports is useful."
- "Yes, I think so too."
- "If it relates to a class assignment or homework."
- "I know a way that I can use it right now – so yes."

What Students Like Most – Focus group students were asked to describe what they like <u>most</u> about the *NewHour* science report(s) they've viewed. Their responses include the following preferences:

- Firsthand interviews with actual scientists;
- Optimistic reports that highlight positive impacts;
- Accessibility of reports online;
- Comprehensibility of reports for high school students;
- Inclusion of knowledgeable young people in reports;
- Care demonstrated by participants in reports/presentations;
- Descriptions of research accomplishments;
- Updates on reports.

These preferences are more fully expressed by students' following remarks:

- "Firsthand interviews with people who are actually involved in science instead of a reporter saying what they think is important. People who are involved in science every day talking about their experiences and not some secondhand report."
- "When I view science reports they're always very optimistic and talk about how this thing is going to be the greatest thing ever and make a huge impact on the world. It's kind of cool watching things that seem like they have a great potential to change society in a positive way."
- "I like two things. First, it's accessible online and the information itself is comprehensible to us because it's not way above our heads and it's not so elementary that it's too easy to understand. Second, I really like that you can see that people our age or a little bit older are doing these things. That shows me that it's possible for us to become involved in science."
- "Yes. The accomplishments in science that people our age are demonstrating are laying down the foundation for us so that this generation can take the torch and carry science forward even further."
- "I like how the people in the auditorium and the people in the science report we viewed actually care about the subjects. Their caring makes me want to know what's so interesting about the science associated with the subjects and it drew me into paying attention to what they had to say."
- "A lot of times reporters talk about what's in development or what might happen, but they don't focus enough on what actually has been accomplished. For example, we hear that a lot of progress is being made in the field of electronics, but we don't hear about what's actually being changed. We just hear that it's growing. We don't know anything about the problems that scientists are facing or what's actually been accomplished, and we don't hear any follow-up on ideas that are initially highlighted and whether or not they were completed."

What Students Like Least – In contrast to the previous question, students were asked to describe what they like least about the *NewHour* science report(s) they've viewed. Nothing negative about the science reports reportedly stood out in their thinking. They did, however, offer critical comments about the panel discussion that include the following dislikes:

- Alternative points of view were not explored;
- Discussion focused on lack of attention given to plant science rather than to its developments;
- Too few audience questions were addressed;
- Not enough details/depth;
- Not comprehensible enough for the average person.

These opinions are more fully expressed by respondents' following comments:

- "This didn't happen towards the end of the panel discussion, but almost throughout the whole hour they all agreed with each other and that kind of made me feel upset because I wanted to hear the other side. There are different perspectives on what needs to be done and I wanted to hear them."
- "I agree that there wasn't enough back-and-forth discussion. It seemed like the moderator was there to make sure things didn't get out of hand than to focus the direction of the conversation. It was more like some of the presidential debates, except that people weren't trying to campaign."
- "I think they talked a little too much about why plant science doesn't get enough attention. I thought it would have been better to have talked about the developments they're making."
- "I agree. They talked about why they need more money, but they didn't really talk about anything that they're working on right now."
- "I think they could have given more time at the end to answer audience questions. They gave these pieces of paper to everybody and a lot of people wrote questions on them, but they only read a couple of them."
- "I don't strongly dislike that they didn't really go into enough detail. I think that a lot of times they assume that the average person isn't going to understand the details. But, even if they're not going to understand the details it might push them to try and understand them without feeling that frustrated. And, for the people who would understand the details, I think they would feel frustrated that there isn't enough depth and that they aren't leaning about how any of this stuff is working."
- "They should make their statements more comprehensible so that the average person can understand what's going on in the field of plant science."
- "I think they should put more emphasis on questions from the audience, how agricultural science can be incorporated into our education, and proposals for solutions to our agricultural problems."

Search Strategies – A request was made for students to describe how they look/search for information about a topic that interests them. The following strategies emerged from their responses:

- Clicking on a Web site's RSS icon to access feeds/channels;
- Support provided by teachers;
- Information provided by the school;
- Video sharing on Web sites such as YouTube;
- Social-networking Web sites such as Facebook.

These strategies are more fully described in respondents' following remarks:

- "There are certain sites that have a little orange RSS box up near the URL that you click on to see brief headlines from other sites. Maybe if you have one of those people will find reports that they are interested in."
- "Somebody mentioned earlier that it would help if the school is involved. We do lots of projects and are told about particular Web sites that we should use as a resource. So if you let all the schools know that you have this archive of science reports that the students can use, then the

students will find out about them that way and will start using them because they have to for school."

- "I think you could advertise, but in unconventional ways like through schools themselves. You could submit materials to schools and teachers to give to students, as opposed to traditional advertising."
- "I think you have to reach out to us in newer ways. For example in the presidential election you heard how Obama was able to get youth involvement because of his YouTube Web site and his Facebook. A YouTube link would be nice. Instead of having to go to your Web site all the time to watch the video, put it on YouTube. That way most of us would find it much more easily."
- "I agree with what he just said, except I get most of my news information from Yahoo RSS feeds. Your news reports should be easily accessible from Web sites that we are already familiar with."

Additional Student Feedback – When asked if there is anything else about the science reports and/or other *Online NewsHour* resources they would like to share with us, four respondents commented that they would like to see more young people included in the science reports. The following additional suggestions were offered by five other students:

- Make reports relevant to viewers' lives;
- Make the science reports 10-15 minutes;
- Provide 5-minute introductory videos with links to full video reports;
- Place long science reports early in a broadcast and shorter ones later;
- Have multiple reports, each covering a different perspective on a single topic.

These suggestions are more fully described in the following remarks:

- "I suggest that you include people who are closer to our age. People who are just entering broadcast news fresh out of graduate school or maybe still in graduate school. Everybody on television news is middle-aged or… I'll say old."
- "I would like to see more young people. I think the views of the old people are outdated. There should be more young people who are knowledgeable and can express their views to other people."
- "Basically to have more young people to show how news personally affects us."
- "I think in science news you're always hearing about something that might happen in the future or will happen somewhere else, but not something that personally relates to you. So, sometimes you could have news about things that will change the life of your audience, not the life of somebody in Ethiopia."
- "I think they should make the reports shorter. If a person doesn't have much time to watch it they're probably less likely to spend that energy finding it and then watching the whole report. So if you make it shorter they will decide that they can fit it into their schedule. I suggest that it be somewhere between five and fifteen minutes."
- "There could be a five minute introduction for you to decide if the story interests you or not and then you have an opportunity to go to the Web site and find the rest of the report. So even if the initial report is only five minutes, there is always the opportunity to go and find more, if you want."
- "If it's an hour-long show, spend more time on fewer important stories at the beginning of the show and place shorter five-minute stories toward the end of the show so we won't forget them."
- "There are many different views of science – such as chemistry, biology, physics, computer science, and engineering – so maybe if you had one topic and then do many different stories surrounding that topic from different perspectives all in one show, as opposed to covering the story from everywhere at once or dividing it into different stories that you show on different days."
- "I think it would be really interesting to bring a high school student or a college student who's in the field doing the research into the discussion to see their perspective. We hear a lot from people who have grown up in the field and it's interesting because they have a perspective of how it's progressed. But also it's nice to get a fresh perspective."

Teacher and Parent Perceptions – Expanding the discussion, parents and teachers were asked to describe their perceptions of the *NewsHour* science report(s) they've viewed. Since their broad ranging responses to this inquiry defy being summarized, you are encouraged to read their following remarks in order to grasp the true nature and tone of the feedback:

- "Viewing television has been replaced by the many hours students spend each day in front of a computer monitor exploring the Internet or on their iPhones. They actively pursue information rather than sitting on the sofa and watching information being thrown at them like our generation did."
- "That's the switch that's happening here. They have way too many choices now so you have to make it relevant to them and you can do that by being active at the school, which is the biggest chunk of their attention during the day. Linking to the school allows you to get into their lives. That creates the lead-in for further contact and the distribution of information. Developing that link is the hardest part, but that's the only way that PBS can into public education."
- "Getting them interested in science news will also provide a way for us to get involved with our kids. That's how I get my kids involved is by doing things with them."
- "As a teacher you try to find new and interesting things that apply to what you're trying to teach. Most kids taking biology, chemistry or physics are just learning the basics, but if you can tie in things like interesting news stories that teachers can use to teach those concepts, that will help both the teachers and the students. The kids will probably come to us and suggest that we check out your Web site. They tell us more than we tell them about resources on the Internet. They're better at that than we are."

Flexibility to Use Science Reports – Teachers often report that they are constrained by state curriculum standards/frameworks and school district teaching guidelines. When asked if they have the flexibility to incorporate use of *NewsHour* science reports into their curriculum, two respondents offered the following feedback indicating that they personally have such freedom as long as the reports are relevant to their instruction:

- "We want to teach the core principles of biology, chemistry, and physics, but we have a lot of freedom in our use of supplementary resources such as *NewsHour* science reports. If there's something that's relevant, then we can apply it to our discipline and the kids buy into it a lot better."
- "We're actually encouraged to incorporate relevant supplementary resources into our teaching and classroom activities. The one thing that I really appreciate about this discussion is that we're in the process of moving to a trimester system and we're trying to incorporate lots of different types of electives for our students and I'm going propose that we teach a course that focuses on hot topics in science. What you guys have done is really useful and is perceived to be cool, so the kids really buy into that."

Questionnaire Feedback

Findings and quoted remarks presented below were obtained from written responses to a post-presentation and post-discussion questionnaire.

Following Franmarie Kennedy's presentation of *Online NewsHour* components, student viewing of a *NewsHour* science report (*Students, Scientists Build Biological 'Machines'*), and a group discussion moderated by Arthur Johnson, focus group students provided written responses to a printed questionnaire. The following is a summary of findings that emerged from this feedback.

Level of Prior Knowledge – When asked how much they know about science news on a daily basis, Table 1, on the following page, shows that students rated their knowledge, as 2.46, on average, using a four-point Likert scale ranging from 1 (I know nothing) to 4 (I know a lot). Note that more than half of them (54.6%) reported generally knowing "a little" about science news and a little over a third (36.4%) self-reported knowing "a moderate amount."

Table 1. Level of Knowledge About Science News

Rating	*Category*	*Responses (N=11)*
4	I know a lot.	1 (9.1%)
3	I know a moderate amount.	4 (36.4%)
2	I know a little.	6 (54.6%)
1	I know nothing.	–
	Average	*2.46*

*Totals may not equal exactly 100.0% due to rounding.

Preferred News Sources and Usefulness Rating – Asked to specify the media sources they access for science news, they identified the sources listed in Table 2 in order of preference. They also rated these sources with regards to their usefulness, which not surprisingly received ratings relative to the order of preference, on average. Note that the Internet is the most preferred and highest rated science news source. For these students television is generally their fourth choice.

Table 2. Source and Rating of Science News

		Rating/Category			
News Source	*Responses Received*	Not Useful	Okay	Very Useful	*Average*
Internet	*9*	–	–	9	*3.0*
Newspaper	*9*	–	2	7	*2.8*
Magazine	*8*	–	3	5	*2.6*
Regular television news	*6*	–	3	3	*2.5*
Radio	*5*	–	3	2	*2.4*
CNN Student News at school	*3*	3	–	–	*1.0*
Channel One at school	*3*	3	–	–	*1.0*

As a follow-up question, students were asked to identify favorite news programs/networks that they watch on television at home and to give a reason why. Their responses indicate that they watch CNN, Fox, MSNBC, VH1, BET, and Science Channel networks and programs such as the Colbert Report, CNN Situation Room, and Comedy Central. The following are their actual responses, which include reasons for their viewing choice(s).

- "Colbert Report – mainly because it's funny, not for the information. Fox – I find that, although more conservative than others, it has less commentary by reporters during reports."
- "CNN. It's convenient and they are politically biased to my liking."
- "CNN Situation Room or any other CNN program. They have knowledgeable anchors who grab your attention on a variety of topics."
- "CNN and MSNBC. I like the staff and style of presentation."
- "CNN. Most trustworthy news channel station around."
- "Comedy Central, VH1, and BET are the networks I most frequently watch."
- "I barely every watch TV."
- "The Science Channel for scientific news."

The students were also asked to identify which information resources, other than books, they use for science homework. All eleven students said they use the Internet, one of them also reported using television, and four identified the following additional resources:

- "Magazines, especially WIRED."
- "NPR"
- "Textbooks, science journals."
- "My parents."

On a slightly different note, the students were asked if they enjoy visiting science centers/museums. A total of ten students responded by saying "Yes" and one said "No." All of them have reportedly visited a science center/museum.

Requested Online Science Resources – Asked which science resources they think should be contained on the *Online NewsHour* Web site, the eleven participating students offered the following suggestions:

- "Useful science equations, relevant news on the same page (Headlines)."
- "Current events regarding science."
- "Text that can be quoted, with appropriate citation. A hub with links to other sites is always helpful."
- "A search for specific subjects. A survey video as well as a larger more in-depth Web site. Links to Web sites related to the videos (i.e., MIT's Bio. news Web site)."
- "Resources specific to every scientific discipline which are easily organized."
- "Informational articles."
- "Specific information on common topics – forums, questions & answers (Q&A)."
- "Links that have science categories separated like biology, chemistry, physics, etc… and have as much information and relevant research under each topic."
- "A search engine that easily links to other Web sites."
- "Current events, medical, research advancements, etc."
- "Links to school research including videos and images to use in projects."

On a similar note, asked if they would use PowerPoint presentations if they were made available on *Online NewsHour*, five students responded by saying "Yes," a similar number said "Maybe" and one said "No."

Perceived Value of Science News – Students were asked how important they think it is to keep up with science news and events. Table 3 shows that nearly three-fourths of them (72.7%) said that it is "Very Important."

Table 3. Value of Science News

Rating	*Category*	*Responses (N=11)*
3	Very important	8 (72.7%)
2	Somewhat important	3 (27.3%)
1	Not important	–
	Average	*2.73*

As a follow-up question, the students were asked if television news programs contain information about science that is useful for them to know. Two-thirds (6) said "Yes" and the other third (3) said "No." Respondents who said "Yes" were asked to describe the ways that keeping up with science news is useful for them. The following are their broad ranging responses:

- "It is usually too irrelevant for me to be interested or too brief for me to have enough information to care."
- "Nutrition, technology, environment (global warming)."
- "Mostly in electronics, new gadgets or programs I can personally use."
- "They give a survey of science that's not useful."
- "Relevant in classes."
- "Keeping up with science news is particularly useful in terms of my physical health and what to eat or not to eat."
- "I use this information for school often."
- "It gives me something to discuss. It inspires me."

Asked if news about science has an impact on their life, ten students said that it does and one said that it doesn't. Probing further, the students were asked if they would like to be more informed about science news/events than they already are. Of the eleven respondents, ten said "Yes" and one said "No."

Overall Rating of The NewsHour's Science Reports – On average, the eleven focus group students gave *The NewsHour's* science report they viewed in the presentation an overall rating of 4.64, using a five-point scale ranging from 1 (Very Poor) to 5 (Very Good), with about two-thirds (63.6%) rating it as "Very Good" and more than a third (36.4%) giving it a "Good" rating (See Table 4).

Table 4. Overall Rating for Science Reports

Rating	*Category*	*Responses (N=11)*
5	Very Good	7 (63.6%)
4	Good	4 (36.4%)
3	Average	–
2	Poor	–
1	Very Poor	–
	Average	*4.64*

Usefulness of an Interactive Science News Web Site – Students were asked if they currently participate in online conversations (e.g., instant messages, blogs, etc.). A total of nine students said they don't and two indicated that they do. They were then asked to rate how useful it would be to have a *NewsHour* science news Web site for students that would include opportunities for them to communicate with other students around the country/world about issues addressed in the *NewsHour* science reports. On average, they rated the usefulness of such an interactive site as 4.46 on a five-point scale ranging from 1 (Not Useful) to 5 (Very Useful), with about half (45.5%) rating it as "Very Useful" and a similar percentage (45.5%) giving it a "Moderately Useful" rating (See Table 5).

Table 5. Usefulness of an Interactive Site

Rating	*Category*	*Responses (N=11)*
5	Very Useful	5 (45.5%)
4	Moderately Useful	5 (45.5%)
3	Okay	1 (9.1%)
2	Slightly Useful	–
1	Not Useful	–
	Average	*4.46*

As a follow-up question, they were asked if they would participate in conversations that are a feature of such an interactive site. Of the eleven respondents to this inquiry, seven said they would, three said they might, and one indicated that she wouldn't.

Science News to Cover In Greater Depth – When asked to describe the type of science news/events that students would like to receive in-depth coverage, each of the eleven students offered the following broad ranging feedback:

- "Applications of science (bridges, construction/demolition, farming, etc.)."
- "Public health, environment."
- "Relevant technologies that directly affect our lives. Changes in accepted science dogmas."
- "Biomedical, engineering and technology, computer science, and other technologies."
- "Events regarding policy towards science on a state and federal level."
- "Developments that impact people."
- "Types of news that affects or includes people at a younger age."
- "How agriculture science affects our nutrition and the interesting things that studying news innovative technology in agriculture can be for students."
- "Body Worlds."
- "Stem cells, abortion from a nonpolitical standpoint, research in biomedical engineering. Opportunities in science, like research internships, etc."
- "I would like to have groundbreaking research in biology, engineering, and computer technology covered in depth."

Suggestions for Enhancing NewsHour's Science News – Focus group students were asked for suggestions that would enable *NewHour* broadcasts and/or *Online NewsHour* to do a good of meeting their learning/information needs. Respondents offered the following broad ranging suggestions:

- "Easy, quick, accessible."
- "Making it more understanding and relatable to younger audience."
- "Articles somewhere between Ph.D. papers and reports that assume audience is completely ignorant. Available (easy and quickly) databases."
- "Tie the science into politics."
- "Coordinating the segments with curriculums of school's around the nation."
- "Variety and options in terms of what information is being presented."
- "Advertise in school."
- "If the information was presented in school, perhaps an auditorium session, it would suit my learning needs."
- "A page of resources on topics related to biology, chemistry, physics, and other areas studied in schools."
- "Host blogs from many different scientists/professionals that could be updated with new information and followed via e-mail or RSS feeds. Also, a good, slick and convenient interface for both computer AND mobile systems such as iPhone."

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Online Field Test Evaluation of *The NewsHour's Science Reports*

Report for

MacNeil/Lehrer Productions
2700 South Quincy Street
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by

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August 14, 2009

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EVALUATION REPORT

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Online Field Test Evaluation Study of

The NewsHour's Science Reports

Executive Summary

August 14, 2009

EVALUATION DESIGN – The findings summarized here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. The video reports appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all science reports are archived on the *Online NewsHour* Web site (www.pbs.org/newshour/science), which includes additional resources such as audio Podcasts, RSS feeds, teacher lesson plans, background reports, slideshows, and interactives.

RESEARCH GOALS AND ISSUES – The general purposes for this study are to find out whether or not the initiative's broadcast and online components are unfolding as planned; uncovering any obstacles, barriers and unintended positive and/or negative effects that have or may emerge; and identifying mid-course adjustments and corrections that can help insure the success of *The NewsHour's Science Desk*. Special attention was given to assessing the initiative's efforts to expand the appeal and usefulness of science reports for audience members who make increasingly greater use of online news and information resources.

RESEARCH PROCEDURES – Field test research obtained feedback from individuals who responded to an online questionnaire after reviewing an average of approximately 3 ten-minute *NewsHour* science reports either online or via DVD (mailed to testers). Members of *The NewsHour's* general audience who have requested to receive *Science Alerts* via e-mail informing them about upcoming science reports constitute the sample for this study.

DEMOGRAPHICS – A total of 31 field testers (17 male, 14 female) who are representative of *The NewsHour's* television and Internet audiences provided feedback about the program's science reports via an online questionnaire. Their feedback regarding demographic and background variables is summarized below

Of the 31 field testers who participated in this evaluation research, 48.4% have reportedly earned a graduate or professional degree, 32.3% have a college degree, 16.1% have completed some college (no degree), and 3.2% are high school graduates. With regards to their science background, 48.4% reportedly have an occupation related to science and 51.6% do not. Probing further, when asked to briefly describe their occupation, field testers offered written descriptions that can be loosely divided into the following nine categories (*Numbers in parenthesis indicate the number of responses that fall within each category.*):

Education (11)	Science Research (3)	Writing/Editing (2)
Computing (4)	Journalism (2)	Quality Assurance (2)
Engineering (4)	Management (2)	Financial Analysis (1)

Note that education, computing, and engineering are the three most cited career fields.

Asked how frequently they usually view *The NewsHour with Jim Lehrer*, 77.4% of the respondents reportedly watch the program as often as they can, with another 12.9% indicating they watch it a few times each month and 9.7% watch it a few times each year. Asked how often they have specifically viewed science reports on *The NewsHour with Jim Lehrer*, 58.1% of the respondents view the reports whenever they are broadcast, 29.0% have reportedly viewed the reports a few times each month, and another 12.9% have seen them a few times each year.

Field testers were asked how often they visit the *Science Reports* section of *Online NewsHour*. Of the 31 respondents to this inquiry, 25.8% reported that they visit *Science Reports* a few times each week. An additional 51.6% indicated that they visit the section a few times each month and 16.1% visit it a few times each year. One respondent has visited it only once or twice and another had never visited the section prior to this study. Probing further, field testers were asked which of the *Online NewsHour* features they have used, if any. The three

most frequently cited features are the *Science Reports* main page, the *Online NewsHour* main page, and the *Earth and Environment* section of *Science Reports*, respectively. Field testers were also asked to specify all of the ways they have viewed/heard *The NewsHour's* science reports. Television broadcasts and Web site/streamed videos are the most frequently cited avenues of access, respectively.

SUMMARY OF FINDINGS – On average, the 31 field testers who responded to an online questionnaire after reviewing approximately three *NewsHour* science reports gave them an overall rating of 4.84 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). Respondents described the science reports they viewed as either "Very Good" (83.9%) or "Good" (16.1%). Probing further, the 22 field testers who had not responded to a similar survey last year were asked to describe their overall reactions to *The NewsHour's* science reports. Five of the respondents simply wrote the word "Excellent" or "Very Informative. Seventeen others expressed similarly positive but more elaborate impressions and suggestions (Page 5).

The nine repeat field testers were asked whether or not they have seen any improvements in *The NewsHour's* science coverage since their prior participation in this online field study. All nine of these reviewers indicated that there has been noticeable improvement. When asked to rate this change using a five-point scale ranging from 1 (Minor) to 5 (Very Large), the improvement received a 4.00 rating, on average. More specifically, two repeat testers have reportedly seen a "Very Large" improvement, five said they've noticed a "Substantial" improvement," and two indicated that there has been "Moderate" improvement.

Asked to describe the aspects of the science reports that they like the most, respondents offered a broad range of positive feedback about numerous aspects of their content, topics, relevance, depth, format, clarity, balance, accuracy, credibility, approach to controversy, ability to motivate, level of interest, and educational value. Since responses to this line of inquiry defy quantification, respondents' written remarks are included in the report (Page 6) to convey the fullness of their attitudes.

When asked to describe what they like least about the science reports, 6 of the 25 respondents to this inquiry simply wrote the word "Nothing," "None," or "n/a" indicating there is nothing about the reports that they dislike. Six others offered the following more expressive positive remarks:

- "It's all good."
- "I have no complaints."
- "There isn't anything I don't like."
- "I like everything about the reports."
- "I truly have no negative comments, just some are more interesting than others because of personal interests."

Four additional respondents offered remarks implying positive attitudes about the reports, but expressing the desire for there to be more of them or that they should be longer. In contrast, others offered broad, multifaceted descriptions and critical perceptions of what they like least about the science reports. Their written remarks and suggestions, which defy quantification, are included in the report on Page 7.

Online field testers were asked to rate their agreement or disagreement with each of the fifteen positive statements shown in Table 9 on Page 8 of the report using a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). On average, all of the statements received high agreement ratings (more than 4.00), except an interest in receiving RSS feeds, which garnered a substantive 3.55 rating. The three statements that respondents agreed with most are: (1) *The NewsHour* broadcast reports on science are informative; (2) Overall, I think the science reports are a useful educational resource; and (3) I will recommend *The NewsHour* broadcasts to others. Respondents did not rate statements that were reportedly not applicable to their review.

2009 vs. 2008 FIELD TEST FINDINGS – Comparing and contrasting findings from the 2009 online field test, summarized above, with the results of a similar study conducted in August 2008 reveals that the 2009 field testers had reportedly seen more *NewsHour* science reports prior to their participation in the study than was reported last year. They also made more frequent pre-study visits to the *Online NewHour* Web site. The ratings given to the science reports and the value of listening to Podcasts of the reports are also higher this year. Similarly, this year's sample gave comparatively higher ratings to such qualities as the informative value of the reports; their effectiveness in communicating science content; their motivational value; their usefulness as a resource for science information/concepts; their overall usefulness as an educational resource; and the value of viewing *NewsHour* streaming video reports and reading report transcripts. One respondent, for example, offered the following observation:

> "*This series of NewsHour Science Reports are much more informative, valid, and research based. They also appeal to young people with their reporting of outbreaks, competitions, and ecological problems. These are excellent reports this time (I have reviewed reports once before). Much improved, focusing on research and experimental methods and conclusions. Value was added by including various age groups in the report and even a little scientific controversy in the Biological Machines segment.*"

Further, a larger percentage of this year's field testers indicated that they will make greater use of the *Online NewsHour* Web site as an educational resource. A larger percentage also said that they will recommend both the *NewsHour* broadcasts and *Online NewsHour* resources to others. In addition, a larger percentage of 2009 testers would reportedly like to receive RSS feeds from *The NewsHour*.

Online Field Test Evaluation of

The NewsHour's Science Reports

August 14, 2009

Project Description

The findings reported here focus on *The NewsHour's* science reports, developed by MacNeil/Lehrer Productions. The video reports appear on *The NewsHour with Jim Lehrer* television broadcasts. Streaming video, audio, and transcripts of all science reports are archived on the *Online NewsHour* Web site *(http://www.pbs.org/newshour/science)*, which includes additional resources such as audio Podcasts, RSS feeds, teacher lesson plans, background reports, slideshows, and interactives.

Research Goals and Issues

Performance of this evaluation study focused on finding out whether or not the initiative's broadcast and online components are unfolding as planned; uncovering any obstacles, barriers and unintended positive and/or negative effects that have or may emerge; and identifying mid-course adjustments and corrections that can help insure the success of the initiative's *Science Desk*. Special attention was given to assessing the initiative's efforts to expand the appeal and usefulness of science reports for audience members who make increasingly greater use of online news and information resources. This summary of findings contains a depth and breadth of feedback provided by field testers about current conceptions of *The NewsHour's* science reports.

Evaluation findings will be considered by the *NewsHour's Science Desk*, along with other data, in order to make decisions about the presentation design and content of *NewsHour* science reports, their online availability along with supplementary resources, and their inclusion in outreach activities. In addition to measuring the impact of the initiative and its success at producing intended outcomes, evaluation activities seek to further knowledge and practice in informal learning by sharing lessons learned from both positive and negative findings. Toward these ends, descriptive and explanatory findings are reported.

The researcher (Dr. Arthur Johnson, Director of Edumetrics) looked for patterns in the quantitative and qualitative data specified below. Communication between the evaluator and project staff took place at the outset of research in order to review developments and agree upon specific evaluation issues. Toward these ends, in addition to obtaining demographic and background information, research methods focused on informing our understanding about the following key issues:

1. Which science reports did field testers select to view?
2. How do they rate *The NewsHour's* science reports, overall?
3. What do they like most and least about the science reports they viewed?
4. How strongly do they agree or disagree with the following statements?
    - *The NewsHour* science reports are informative.
    - The science reports effectively communicate science content.
    - The science reports motivated me to learn more about the topic.
    - *Online NewsHour* is a useful resource for science information and concepts.
    - *Online NewsHour* provides features that are easy to use.
    - Viewing science reports online via streaming video is a valuable feature.
    - *Science Alert* is a useful way to get information from *The NewsHour*.
    - Listening to audio Podcasts of science reports is a valuable feature.
    - Access to transcripts of science reports is a useful feature.
    - Teacher lesson plans from *For Teachers: NewsHour Extra* are helpful. *(http://www.pbs.org/newshour/extra/teachers/science)*
    - I would like to receive RSS feeds from *The NewsHour*.
    - I will use *Online NewsHour* as an educational resource.
    - I will recommend *Online NewsHour* to others.

- I will recommend *The NewsHour* broadcasts to others.
- Overall, I think *Online NewsHour* is a useful educational resource.

5. What are new field testers' overall reactions to *The NewsHour's* science reports?
6. Do repeat field testers' see any improvements in *The NewsHour* science coverage since their prior participation in an online field study? If so, how do they rate the change?

The feedback obtained regarding these issues informs our understanding about the efficacy of *The NewsHour's* science reports for participants in diverse informal learning and outreach activities. This methodology also provides insights into planned and unplanned outcomes of project implementation. Research procedures, demographic and background variables, and evaluation findings are reported below.

Research Procedure

Field test research obtained feedback from individuals who responded to an online questionnaire after reviewing an average of approximately 3 ten-minute *NewsHour* science reports either online or via DVD (mailed to testers). Members of *The NewsHour's* general audience who have requested to receive *Science Alerts* via e-mail informing them about upcoming science reports constitute the sample for this study.

Demographic & Background Variables

A total of 31 field testers (17 male, 14 female) who are representative of *The NewsHour's* television and Internet audiences provided feedback about the program's science reports via an online questionnaire designed to explore the key research issues specified above for this study. Their feedback regarding demographic and background variables is summarized below.

Field Tester Education Level – Table 1 shows that 48.4% of the online field testers have reportedly earned a graduate or professional degree, 32.3% have a college degree, 16.1% have completed some college, and one individual is a high school graduate.

Table 1. Highest Level of Education Completed (N=31)

Education Level	*Responses Received**
Graduate or Professional Degree	15 (48.4%)
College	10 (32.3%)
Some College	5 (16.1%)
High School	1 (3.2%)
Some High School	–
Other	–

Asked to provide a mailing address if they would like to receive a small token of appreciation, nineteen testers/reviewers provided contact information that will be given directly to project staff rather than published here in order to protect participants' privacy rights.

Occupation – Of the 31 field testers who participated in this evaluation research, 15 (48.4%) reportedly have an occupation related to science and 16 (51.6%) do not. Probing further, when asked to briefly describe their occupation, field testers offered written descriptions that can be loosely divided into the following nine categories, which include their actual description (Note that education, computing, and engineering are the three most cited career fields):

Education (11)
- *Educator*
- *Instructor*
- *College teacher*
- *Science teacher*
- *Biology teacher*
- *General Science & Biology teacher now English teacher*

- *Teaching Environmental Science to Community College students.*
- *High School astronomy and biology teacher*
- *Informal Earth science educator at science center*
- *Geography lecturer at university*
- *Ethics and Culture teacher*

Computing (4)
- *Computer software product development/management*
- *Computer science researcher*
- *Computer systems developer*
- *Computer systems analyst*

Engineering (4)
- *Electrical engineer*
- *Mechanical engineer*
- *NASA engineer*
- *Systems analysts – engineering*

Science Research (3)
- *NIH science researcher*
- *Soil scientist*
- *Chemistry*

Quality Assurance (2)
- *Environmental lab & pharmaceutical Quality Assurance*
- *Quality Assurance – aerospace*

Management (2)
- *Special projects manager for Permanent RadWaste Solutions*
- *Aerospace management*

Journalism (2)
- *Science journalist*
- *Journalist*

Writing/Editing (2)
- *Medical science writer/editor*
- *Science writer*

Financial Analysis (1)
- *Quantitative financial analyst*

Frequency of Viewing The NewsHour Broadcasts – Asked how frequently they usually view *The NewsHour with Jim Lehrer* (See Table 2), 77.4% of the respondents reportedly watch the program as often as they can, with another 12.9% indicating they watch it a few times each month and 9.7% watch it a few times each year.

Table 2. Frequency of Viewing NewsHour Broadcasts (N=31)

Frequency	*Responses Received*
As often as I can	24 (77.4%)
A few times each month	4 (12.9%)
A few times each year	3 (9.7%)
Only once or twice ever	–
I have never seen the program	–

Frequency of Viewing Science Reports on The NewsHour – Asked how often they have viewed science reports on *The NewsHour with Jim Lehrer* (See Table 3 on the following page), 58.1% of the respondents view the reports whenever they are broadcast, 29.0% have reportedly viewed the reports a few times each month, and another 12.9% have seen them a few times each year.

Table 3. Frequency of Viewing Science Reports on The NewsHour (N=31)

Frequency	*Responses Received*
Whenever they are broadcast	18 (58.1%)
A few times each month	9 (29.0%)
A few times each year	4 (12.9%)
Only once or twice ever	–
I have never seen a broadcast science report	–

Frequency of Visiting Online NewsHour's Science Reports – Field testers were asked how often they visit the *Science Reports* section of *Online NewsHour* (See Table 4). Of the 31 respondents to this inquiry, 25.8% reported that they visit *Science Reports* a few times each week. An additional 51.6% indicated that they visit the section a few times each month and 16.1% visit it a few times each year. One respondent reportedly has visited the section only once or twice ever, and another had not visited the *Online NewsHour: Science Reports* section prior to this study.

Table 4. Frequency of Viewing Online NewsHour: Science Reports (N=31)

Frequency	*Responses Received**
A few times each week	8 (25.8%)
A few times each month	16 (51.6%)
A few times each year	5 (16.1%)
Only once or twice ever	1 (3.2%)
I had never visited *NewsHour: Science Reports*	1 (3.2%)

*Totals may not equal exactly 100.0% due to rounding.

Use of Online NewsHour Features – Field testers were asked which of the *Online NewsHour* features listed in Table 5 they have used, if any. Note that the three most frequently cited features are the *Online NewsHour* main page, the *Science Reports* main page, and the *Earth and Environment* section of *Science Reports*, respectively.

Table 5. Online NewsHour Features Used

Feature	*URL*	*Responses Received*
Online NewsHour main page	www.pbs.org/newshour	23
Science Reports main page	www.pbs.org/newshour/science	16
Body and Brain section	www.pbs.org/newshour/science/body	6
Earth and Environment section	www.pbs.org/newshour/science/earth	15
Space section	www.pbs.org/newshour/science/space	9
Technology section	www.pbs.org/newshour/science/technology	4
Video section	www.pbs.org/newshour/science/video	10
Archive section	www.pbs.org/newshour/topic/science	6
RSS Feed	www.pbs.org/newshour/rss	1
Podcast	www.pbs.org/newshour/rss/media	2

Ways Field Testers Viewed NewsHour Science Reports – Online field testers were asked to specify all of the ways they have viewed/heard *The NewsHour's* science reports. Table 6 summarizes their responses to this inquiry. Note that online/streamed video (39.7%) and television broadcasts (36.5%) are the most frequently cited avenues of access, respectively.

Table 6. Ways Science Reports Were Viewed

Frequency	*Responses Received*
Online/streamed video	25 (39.7%)
Television	23 (36.5%)
Podcast	9 (14.3%)
RSS feed	4 (6.3%)
DVD	2 (3.2%)

Science Reports Viewed by Field Testers – Field testers were asked to view as many of the four science report videos listed in Table 7 as their time permits. Note that their reviews included an examination of more than 3 reports (i.e., 3.6), on average.

Table 7. Science Report Videos Viewed (with accompanying text)

Science Report	*Count*
World's Oceans Face Plastic Pollution Problem *(www.pbs.org/newshour/bb/science/july-dec08/plasticocean_11-13.html)*	31
Scientists Build Biological "Machines" from DNA Parts *(www.pbs.org/newshour/bb/science/july-dec08/diybio_12-30.html)*	29
Scientists Search for Source of Salmonella Outbreak *(www.pbs.org/newshour/bb/science/july-dec08/salmonella_09-10.html)*	27
Scientists, Students Study Space Storms *(www.pbs.org/newshour/bb/science/jan-june07/themis_05-16.html)*	23
I have not viewed any of these reports.	–
Total	*110*

Findings

As previously specified, field test research obtained feedback from 31 testers/reviewers (17 male, 14 female) who responded to an online questionnaire after reviewing more than 3 *NewsHour* science reports, on average. The following findings emerged from their responses to this inquiry:

Overall Rating of The NewsHour's Science Reports – On average, the 31 field testers who responded to an online questionnaire after reviewing approximately three science reports gave them an overall rating of 4.84 on a five-point Likert scale ranging from 1 (Very Poor) to 5 (Very Good). As shown in Table 8, below, questionnaire respondents rated the science reports they viewed as either "Very Good" (83.9%) or "Good" (16.1%).

Table 8. Overall Rating of The NewsHour's Science Reports (N=31)

Categories	*Responses* Number (%)	*Mean Rating*
Very Good	26 (83.9%)	
Good	5 (16.1%)	**4.84**
Average	–	
Poor	–	
Very Poor	–	

Probing further, the 22 field testers who had not responded to a similar survey last year were asked to describe their overall reactions to *The NewsHour's* science reports. Five of the respondents simply wrote something like "Excellent" or "Very informative." Seventeen others expressed the following similarly positive but more elaborate impressions and suggestions:

- "It's a good service that needs more publicizing."
- "I find them excellent. I have always said that I want to keep myself informed of the newest research findings in science, and this seems a good way to do it."
- "I wish there were more of them and scientist interviews, especially those like the 'greats' who spanned the recent history of their field before they died – e.g. John Wheeler who recently died.
- "It allows a way to review programs outside of TV limits and scheduling."
- "Though the reports are limited to overviews, they do provide an introduction to various contemporary scientific research."
- "I'm particularly pleased to be able to watch *NewsHour* reports online. Higher definition would be welcome."
- "Equal to the highest journalistic standards set by *The NewsHour with Jim Lehrer*!"
- "They are excellent, as far as they go."
- "Keep up the good work."
- "I use *NewsHour* reports very often in my classes. They are extremely helpful.

- "I am a returning responder and thoroughly enjoy learning from your reports, but I want you to know I often get the Science Alerts too late in the day to make it home in time to see/tape the report. Is there a way you can send them earlier in the day? Thanks."
- "I use *NewsHour* reports very often in my classes. They are extremely helpful."
- "I thought that the reports were very well done, and as a science teacher, I plan to research topics that may have appeared that will support my science curriculum."
- "Very positive. Would like to have more reports on science & engineering on *The NewsHour*."
- "Excellent reporting. There needs to be more emphasis on climate change. Save the resources please."
- "I acquire valuable knowledge from viewing *NewsHour* science reports."
- "Interesting, factual, fast moving, easy, clear language."

The nine repeat field testers were asked whether or not they have seen any improvements in *The NewsHour's* science coverage since their prior participation in last year's online field study. All nine of these reviewers indicated that there has been noticeable improvement. When asked to rate this change using a five-point scale ranging from 1 (Minor) to 5 (Very Large), the improvement received a 4.00 rating, on average. More specifically, two repeat testers have reportedly seen a "Very Large" improvement, five said they've noticed a "Substantial" improvement," and two indicated that there has been "Moderate" improvement.

Most and Least Liked Aspects of the Science Reports – Asked to describe the aspects of the science reports that they like the <u>most</u>, respondents offered a broad range of positive feedback about numerous aspects of their content, topics, relevance, depth, format, clarity, balance, accuracy, credibility, approach to controversy, ability to motivate, level of interest, and educational value. Since responses to this line of inquiry defy quantification, respondents' written remarks are included below to convey the full scope and nature of their feedback.

<u>Most Liked Aspects of the Science Reports</u>

- "Being able to see reports that I missed."
- "State of the art for research and development is explained."
- "Technology/space, etc. I wish there were more of them."
- "Variety of topics and clarity of exposition."
- "In-depth easy to understand information."
- "They provide a quick overview of contemporary scientific problems and research."
- "The extras accompanying "World's Oceans Face Plastic Pollution Problem" were explanatory. The Q&A Forum especially helped to explain the problem."
- "The science is invariably more accurate than in the popular press."
- "Interesting mix of science and news."
- "This series of *NewsHour* science reports is much more informative, valid, and research based. They also appeal to young people with their reporting of outbreaks, competitions, and ecological problems. These are excellent reports this time (I have reviewed repots once before). Much improved, focusing on research and experimental methods and conclusions. Value was added by including various age groups in the report and even a little scientific controversy in the Biological Machines segment."
- "The selectivity of the topics (of general scientific as well as technology interests) and their conciseness and completeness."
- "Informative, different perspectives on some subjects/issues. For example, I found it extremely interesting that the Northern Lights Project in Alaska really "Turned-on" a number of young students to science as an interest and possible career goal."
- "Their ability to translate science to the lay person."
- "They are easily understood, entertaining and stimulate thought."

- "They point out many unknown facts that are difficult to find without spending a good deal of time online."
- "Good level for my students. Talks to the audience not at them."
- "They bring a "human interest" angle into the reports. The magnetometer report used high school aged students and that is the grade level I teach. My students will be interested."
- "Information I couldn't find anywhere else. Excellent resource for teaching and students."
- "The availability is good."
- "Timely."
- "Diverse topics."
- "Useful for inspiring students to consider science and engineering careers."
- "The clarity and understandability of the content; the outstanding visuals; and the increase in awareness of the issues and problems, with a boost in motivation to become involved in finding solutions."
- "They seem balanced."
- "They were very informative and made me learn more about some of them."
- "They are up to date on topics that interest young persons and I trust the information."
- "It is presented at a level useful to the typical viewer. Resources provided for further information is very good."

When asked to describe what they like least about the science reports, 6 of the 25 respondents to this inquiry simply wrote the word "Nothing," "None" or "n/a" indicating there is nothing about the reports that they dislike. Six others offered the following more expressive positive remarks:

- "It's all good."
- "I have no complaints."
- "There isn't anything I don't like."
- "I like everything about the reports."
- "I truly have no negative comments, just some are more interesting than others because of my personal interests."

Four additional respondents offered the following remarks implying positive attitudes about the reports, but expressing the desire for there to be more of them or that they should be longer:

- "Too infrequent."
- "We need more of them."
- "I wish they were longer."
- "Length – Too short."

In contrast, other field testers offered broad, multifaceted descriptions and critical perceptions of what they like least about the science reports. Their written remarks and suggestions, which defy quantification, are included below.

Least Liked Aspects of the Science Reports

- "Sometimes just people giving their opinions and not information or facts."
- "The report "Scientists Build Biological 'Machines' from DNA Parts" was split between synthetic biology and DYIbio. It should have just stuck with explaining synthetic biology. The Slide Show accompanying "Scientists, Students Study Space Storms: How THEMIS Works" was not as explanatory as it needed to be. How does THEMIS answer the science questions and what are they?"
- "Some segments are too long, interviews repetitive."
- "More advanced notification of their showings (with synopses, if practical). An online, searchable listing of all reports – past, scheduled and contemplated) would be quite useful."
- "Links to further resources on the subject matter would be helpful."

- "Sometimes, there is not enough science content to make the time spent worthwhile in science class."
- "They were shorter than I would have liked."
- "Not enough information on what scientists do and how important their work is."
- "It would be helpful to include follow-up articles to bring the subjects up-to-date."
- "I feel they suffer from a lot of typical science reporting – lots of facts, but not a compelling story in a lot of cases. Therefore, they're hard to engage with for long periods. Also, I am disturbed by your Web site that has a section called "The Global Warming Debate." Among scientists there is no debate and it is primarily the media continuing this misinformation. As a trained journalist I understand the need to present both sides, but you can't present both sides as equal when they're not."

Agreement/Disagreement With Statements About the Science Reports – Field testers were asked to rate their agreement or disagreement with each of the fifteen positive statements shown in Table 9 using a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Note that, on average, all of the statements received high agreement ratings (more than 4.00), except an interest in receiving RSS feeds, which garnered a substantive 3.55 rating. The three statements that respondents agreed with most are: (1) *The NewsHour* broadcast reports on science are informative; (2) Overall, I think the science reports are a useful educational resource; and (3) I will recommend *The NewsHour* broadcasts to others. Respondents did not rate statements that were reportedly not applicable to their review (See n/a column).

Table 9. Rating Agreement/Disagreement With Statements

			Rating					
Statement	*N*	*n/a*	*1*	*2*	*3*	*4*	*5*	*Average*
The NewsHour science reports are informative.	*31*	–	–	–	–	5	26	*4.84*
The science reports effectively communicate science content.	*31*	–	–	–	1	9	21	*4.65*
The science reports motivated me to learn more about the topic.	*30*	–	–	–	4	12	14	*4.33*
Online NewsHour is a useful resource for science information/concepts.	*31*	–	–	–	1	11	19	*4.65*
Online NewsHour provides features that are easy to use.	*31*	1	–	1	3	16	10	*4.17*
Viewing science reports online via streaming video is a valuable feature.	*31*	4	–	–	2	4	21	*4.70*
Science Alert is a useful way to get information from *The NewsHour*	*31*	1	–	–	2	11	17	*4.50*
Listening to audio Podcasts of science reports is a valuable feature.	*31*	8	–	–	7	9	7	*4.52*
Access to transcripts of science reports is a valuable feature.	*30*	2	–	–	5	8	15	*4.36*
Teacher lesson plans from *For Teachers: NewsHour Extra* are helpful.	*31*	16	–	–	1	7	7	*4.40*
I would like to receive RSS feeds from *The NewsHour*.	*31*	11	1	3	5	6	5	*3.55*
I will use *Online NewsHour* as an educational resource.	*31*	8	–	1	3	8	11	*4.26*
I will recommend *Online NewsHour* to others.	*31*	7	–	1	1	6	16	*4.54*
I will recommend *The NewsHour* broadcasts to others.	*31*	1	–	–	1	6	23	*4.73*
Overall, I think *Online NewsHour* is a useful educational resource.	*30*	1	–	–	–	6	23	*4.79*

PBS NewsHour Audience Data and Transformation Discussion

The PBS NewsHour *(formerly The NewsHour with Jim Lehrer)* is among the most respected daily news program on television. In fact, the 2008-09 Erdos & Morgan Opinion Leader Survey ranks *The NewsHour* **1st among all daily television news programs as the most credible and most influential news program.**

Additionally, a recently conducted, 2010 Roper Study called PBS the most trusted institution in America and the most trusted source of news in America as well.

U.S. Broadcast

Television: U.S. PBS and international distribution
Radio: U.S. Public Radio in major markets

Online

- **The *Online NewsHour*** (500,000+ unique weekly visitors or 800,000+ average weekly page views). The site contains 39,000+ pages of content.
- **Podcasts and other MP3 Downloads** (150,000+ weekly audio files)
- **Video** (160,000+ weekly downloads via NewsHour & local PBS station Web sites)
- ***NewsHour* daily program preview e-mail blasts** (62,000+ daily to subscribers)
- ***Display Sponsor Messages, Audio and Video Pre-roll Sponsor Messages***

In the area of science, between March 15, 2009 and March 15, 2010, the online NewsHour web site enjoyed approximately 140,000 page views of science pages & articles; approximately 18,869 page views of science reports homepage; and approximately 8,626 page views within our science & technology reporting archives.

International TV:

- Virtually coast to coast in Canada and Australia.
- Japan via NHK Direct Broadcast Satellite (Channel One).
- 26 countries throughout northern Africa and the Middle East via Orbit Satellite TV.
- Via American Forces Television to more than 800,000 U.S. military service and State Dep't. personnel in 175 countries around the world and on U.S. Navy ships at sea.
- Additional markets in Europe, Asia, Africa and Latin America, via the U.S. State Department's WorldNet satellite service.

Radio:

- Public radio stations, five nights a week. Current station include:
  - Washington, DC WETA-FM 7:00pm
  - Boston, MA WGBH-FM 7:00pm
  - New York City, NY WNYC-AM 11:00pm

-	San Francisco, CA	KQED-FM	3:00pm
-	Sacramento, CA	KQEI-FM	3:00pm
-	Dallas, TX	KERA-FM	7:00pm
	Southeastern, MA	WCAI-FM	9:00pm
-	Portales, NM	KENW-FM	6:00pm
-	Buffalo, NY	WNED-AM	7:00pm
-	Southampton, NY	WLIU-FM	6:00pm
-	Grand Rapids, MI	WGVU-AM	10:00pm
-	Urbana, IL	WILL-AM	9:00pm

- United Kingdom, Western Europe and Africa via WRN satellite radio.

The NewsHour Audience

Airing Monday-Friday on more than 300 PBS stations throughout the United States, *The NewsHour* is available to more than 98% of all U.S. television households.

In the United States, *The NewsHour* is seen by nearly 2 million viewers and online visitors each night, and approximately 6 million unduplicated viewers and online users per week. The audience consists of well-educated, upscale, opinion leaders, influentials and policy shapers who are active in their communities.

Average Television Household Rating	0.8
$75K+ HH Avg. Rating:	1.1
Head of HH College 4+yrs Avg. Rating:	1.7
Adults 35-64 Average Rating	0.4

(SOURCE: October 2009 to February 2010 NTI and PBS Data)

Active and Influential in the Community

NewsHour viewers significantly out-index the general public (100% index) in terms of their community influence and involvement, for example:

	Index
Actively worked for a political party/candidate	**244%**
Participated in environmental groups/causes	**221%**
Attended a political rally or protest	**184%**
Wrote or called an elected official	**183%**
Actively involved to influence policy	**179%**
Wrote to the editor of a magazine/newspaper	**165%**

(SOURCE: MRI 2008 Doublebase Study)

Significant Investors

NewsHour viewers are significant investors:

	Index
Used a Discount Brokerage Service	**351%**
Owns $150,000 in Stocks	**332%**
Owns Shares in Tax Exempt Funds	**226%**

Used Full Service Brokerage Firm	**177%**
Owns a vacation home	**156%**

(SOURCE: MRI 2008 Doublebase Study)

2008/09Erdos & Morgan Survey Results

In addition to confirming the NewsHour's status as the most influential, credible and objective daily news program on television (from a list of 49 commercial broadcast, cable and public television offerings), Erdos and Morgan also reveals that a large percentage of opinion leaders who have "direct involvement" with specific issues that may be important to Sponsor are NewsHour viewers.

A sample of those issues and the percentage of opinion leaders are below:

ISSUE	***% who View The NewsHour***
Direct Foreign Investment	54%
Digital Divide and Universal Service	47%
Global Democracy	45%
International Law	45%
Media Consolidation	45%
National Energy Policy	**44%**
Bilateral/Multilateral Trade Agreements	42%
Industrial Competitiveness	42%
Global Warming	**42%**
Digital Rights Management	41%
Wireless and Spectrum Policy	41%
Advertising Targeting Children & Minors	41%
Outsourcing American Jobs	41%
Telecommunications Industry Regulation	39%
Science & Public Policy	38%
Clean Technologies (new question)	38%
Internet/WWW	38%
Labor Standards & Practices	38%
Workplace Regulation	38%
Basic Research	**37%**
International Labor Standards & Practices	37%
Corporate Governance & Business Ethics	37%
Copyrights/Patents/Intellectual Property	36%
Scientific Freedom & Responsibility	**35%**
Diversity Education/Multi-Culturalism	35%
Free Trade	34%
Guest Worker Program	33%
Productivity	33%
Energy-Related Industries	**31%**

The NewsHour **is Valued and Viewed by Opinion Leaders**

Additionally, the2008/09Erdos & Morgan survey indicates that The NewsHour is seen by the following percentages Opinion Leaders:

- 37% of all Opinion Leaders
- 45% of the Congressional Branch
- 39% of the Executive Branch
- **41% of those in Science**
- 42% of those in Communications/Media
- 38% of those in Education
- 30% of all Business Leaders

SOURCE:2008-09 Erdos & Morgan Opinion Leader Survey

Further examination of the 2008/09 Erdos & Morgan data indicates that a larger number of "Opinion Leaders" view The NewsHour than many news and public affairs program in its competitive set:

Program	Network	"Opinion Leader" Audience
The NewsHour	***PBS***	***197,455***
Meet The Press	NBC	170,000
Anderson Cooper 360	CNN	145,489
The Daily Show (Jon Stewart)	Comedy	143,388
The O'Reilly Factor	FNC	137,286
Hardball w/ Chris Matthews	MSNBC	135,013
Face the Nation	CBS	125,345
The Colbert Report	Comedy	121,452
The Situation Room	CNN	115,823
This Week With G. Stephanopoulos	ABC	102,060
Lou Dobbs Tonight	CNN	100,500
Countdown w/ Keith Olbermann	MSNBC	95,436
Fox News Sunday	FOX	71,143
Fox Report w/S. Smith	FNC	67,972
Nightly Business Report	PBS	55,693
Mad Money (Jim Cramer)	CNBC	31,724
Kudlow & Company	CNBC	28,933

Transformational Change at the PBS NewsHour

As stated above, in the U.S., the PBS NewsHour engages nearly 2 million TV viewers, radio listeners and online visitors each night, and approximately 6 million unduplicated viewers, listeners and online users per week. The audience consists of well-educated, upscale, opinion leaders, influentials and policy shapers who are active in their communities

Research recently commissioned by the Corporation for Public Broadcasting finds that a majority of public television viewers consider the NewsHour to be their linchpin for understanding the world, citing the program's values of trust, quality, intelligence and balance. Further, according to the 2008/09 Erdos & Morgan Survey of Opinion Leaders, influential leaders in government, business, public policy, media, education and science call the NewsHour "the most credible, objective and influential daily program on television."

In order to retain our leadership in thoughtful journalism, and to be available to our audience regardless of how they choose to find us, the NewsHour recently merged its broadcast and online staffs and efforts, strengthening both of them while also attracting new audiences to each element. The graphic presentation on both platforms has been redesigned to reflect their new compatibility. To embody this merger in the minds of our audience, a new correspondent, Hari Sreenivasan, has joined the program to serve as anchor of the news summary on the broadcast and to post video news summaries and conduct interviews on our digital platforms.

All these changes became apparent on December 7, 2009 when the show re-launched as THE PBS NEWSHOUR, signaling its pivotal role among the news and public affairs content provided on public media. In addition to bringing together broadcast and online, the new format capitalizes on our NewsHour team as a key component of our coverage, and places strong emphasis on our seasoned and highly regarded journalists. The program now has a two-anchor format, featuring Jim Lehrer with other anchors in rotation. Additionally, we now send more of our senior correspondents "outside the studio" to deliver compelling original reporting from the field, whether it be a global health segment from Tanzania, an in-depth analytical report from Afghanistan or a piece about the work of a social entrepreneur in Borneo.

The NewsHour will continue to search for ways to achieve the widest possible distribution – via live television broadcast; on demand; online; on public and satellite radio; via video and audio podcasts; on smart phones; and on emerging platforms as they become viable.

Initial indications about the "new" PBS NewsHour are encouraging, as detailed in these statistics for the week following our Dec. 7 launch:

- **Re-Launch week records second highest web traffic of the entire year -** Wednesday, Dec. 9, traffic to the website during the week of the re-launch was among the highest of the year – second only to the NewsHour's coverage of the Presidential Inauguration in January 2009.

- **Web visitors and video viewers increase -** For the week of Dec. 6-12 pageviews on the PBS NewsHour Web site increased over 45% for the week as compared to the previous month and the number of absolute unique visitors increased 26%.

- **Traffic to NewsHour video player more than doubles** from the same period last year.

- **PBS Video Player:** Views of the NewsHour program page on the PBS video player, (where visitors go to watch the full program) increased by 80% during the week of Dec. 6-12.

- **Broadcast now driving viewers to the web site - NewsHour.pbs.org** is a new URL launched this year to enable us to see how many people come directly from the program to the site -- as opposed to going through a search engine or via PBS.org. When comparing the week of Nov. 16-22 (skipping Thanksgiving week) to the week of Dec. 7, there was a 180% increase in people typing "newshour.pbs.org" into their browsers.

- **New "NEWSHOUR" YouTube channel popular** In less than a week since its introduction, the PBS NEWSHOUR YouTube channel was the 81st fastest growing channel on all of YouTube as of Wednesday morning, Dec. 16

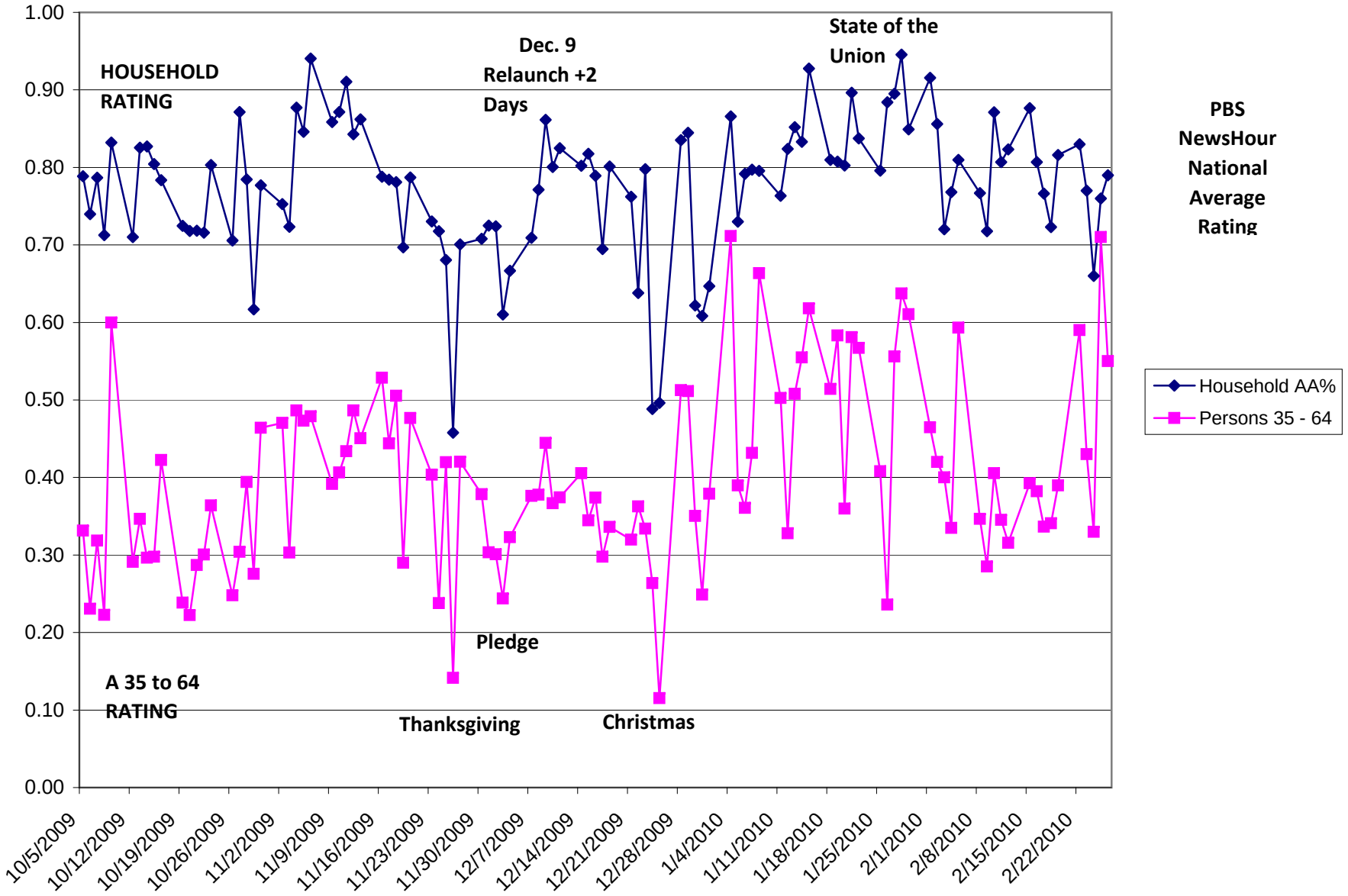
Additionally, a comparison of online traffic covering the date ranges of **Dec. 3, 2008 - February 21, 2009 compared to Dec. 2, 2009 - February 21, 2010**, reveals the following:

- **Total Page views:**	**09/10: 5,739,857**	**vs.**	**08/09: 4,635,784**	**(+24%)**
- Pages per Visit:	**09/10: 1.92**	**vs.**	**08/09: 1.66**	**(+15%)**
- Total Visits:	**09/10: 2,990,100**	**vs.**	**08/09: 2,787,625**	**(+ 7%)**
- Avg. Time on Site:	**09/10: 02:40 minutes**	**vs.**	**08/09: 1:42 minutes**	**(+57%)**
- Returning Visitors:	**09/10: 1,387,823**	**vs.**	**08/09: 982,252**	**(+41%)**
- Video Views:	**09/10: 1,233,652**	**vs.**	**08/09: 725,681**	**(+69%)**

At the heart of all the NewsHour does is one key issue that shapes all the rest: a firm commitment to continue producing serious journalism with in-depth, balanced reporting.

As Jim Lehrer said in introducing our new broadcast and digital product in December:

"What will not change is our commitment to serious journalism – MacNeil Lehrer journalism – the kind of work we've been doing for 35 years. This is needed now more than ever."


1.00
0.90
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0.70
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0.20
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0.00
HOUSEHOLD RATING
Dec. 9 Relaunch +2 Days
State of the Union
A 35 to 64 RATING
Pledge
Thanksgiving
Christmas
10/5/2009
10/12/2009
10/19/2009
10/26/2009
11/2/2009
11/9/2009
11/16/2009
11/23/2009
11/30/2009
12/7/2009
12/14/2009
12/21/2009
12/28/2009
1/4/2010
1/11/2010
1/18/2010
1/25/2010
2/1/2010
2/8/2010
2/15/2010
2/22/2010
PBS NewsHour National Average Rating
Household AA%
Persons 35 - 64