"Real World" Connections Through Videoconferences

The Learning Technologies Project (LTP) is a partner in the National Aeronautics and Space Administration's (NASA's) educational technology program unit, an electronic community center that fosters interaction, collaboration, and sharing among educators, learners, and scientists. The goal of the NASA Glenn Research Center's Learning Technologies Project is to increase students' interest and proficiency in mathematics, science, and technology through the use of computing and communications technology and by using NASA's mission in aerospace technology as a theme. The primary components are:

- Beginner's Guide to Aeronautics, including interactive simulation packages and teacher-created online activities.
- NASA Virtual Visits, videoconferences (with online pre- and post-conference activities) connecting students and teachers to NASA scientists and research.

NASA Virtual Visits, uses videoconferencing, the Internet, and interactions with experts to motivate students by providing real-world experiences. Students gather resources from the Web, communicate with team members and experts through e-mail, and are introduced to the thought processes of experts in the research community through videoconferencing connections. Students admit that knowing that experts might see their work is a great motivator!

During the week of July 23, 2001, a workshop called Japan 2001 Science, Creativity and the Young Mind took place at Bristol University in Bristol, England. Coordinated by the Clifton Scientific Trust, it brought together 60 British and Japanese students and provided them with a forum for learning and interacting. One of the aims of the Workshop was to give the combined group a new view of themselves as potential scientists and an ambition to succeed at the highest level.

NASA's involvement with the Workshop began following a successful pilot project with The Holy Cross School, Surrey, UK, in the summer of 2000. Ruth Petersen, Glenn Research Center (GRC) Learning Technologies Project Educational Coordinator, was contacted by Lawrence Williams, Director of Studies at The Holy Cross School, about a possible collaboration with the Director of the Clifton Scientific Trust, Dr. Eric Albone, who shares Petersen's commitment to real world science education. Realizing the true potential of international collaboration using ICT tools, Petersen contacted her colleague, Joe Kolecki.

During the Workshop Kolecki participated with six of the students and their team leaders as a Space Science Team. Working within the framework of a new ICT Learning Model devised in collaboration with Williams, four interactive videoconferencing sessions were held between GRC and Bristol University on four consecutive days. During the sessions, students raised questions
concerning various theories about the probable formation of volcanoes on Mars. Of specific interest was if the great Tharsis volcanoes might be the result of an ancient collision of planetary proportions, or if plate tectonic movement, evidence for which was recently discovered by NASA’s Mars Global Surveyor Spacecraft, might account for them.

The shared vision and enthusiasm of the team brought the Space Science project to its successful conclusion. A site has been developed by Glenn’s LTP Technology Coordinator to highlight and showcase the entire process. The site includes:

| ABOUT THE SPACE SCIENCE TEAM | • Introduction  
|                            | • Participants  
|                            | • Learning Technologies Project (LTP) and Partner Connection  
| TOUR (of the event)         | • Before  
|                            | • During  
|                            | • After  
| STUDENT PRESENTATIONS      | • British Student’s Written Report  
|                            | • Japanese Student’s Written Report  
|                            | • PowerPoint Presentation created by the Workshop Team  
| LINKS AND RESOURCES         | Additional Resources Used by the Students during the Workshop  
| VISUAL TOUR OF THE EVENT    | • Still Images  
|                            | • Videos  
|                            | • Animation/VR  
| PUBLICATIONS                | • Before the Workshop  
|                            | • After the Workshop  
| FEEDBACK                    | • Comments from all Participants  
|                            | • Message Board for Student Scientists  
|                            | • Message Board for Science Educators and Users of ICT Tools in Education  

Reports completed by the students (Japanese and British) during the weeks following the Workshop have been posted from the site. Message boards for feedback from students who wish to continue or comment on the research and for feedback or comments from educators using the ICT tools in their classrooms or science education in general will keep the site dynamic. I am pleased to share the site with participants at the 2002 Poskole Conference, and I would like to dedicate the presentation to Joe Kolecki and Eric Albone, who were unable to attend.
Joe "The Lone Ranger" Kolecki

URL: www.grc.nasa.gov/WWW/K-12. Follow the link from What's New or
Videoconferences with the UK
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Team Specialists:
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University of Bristol, Earth Sciences

Mr. Lawrence Williams, Holy Cross School, New Malden

By video link, Mr. Joseph Kolecki, Ms. Ruth Petersen, and colleagues, National
Aeronautics and Space Administration (NASA) Glenn Learning Technologies
Project, Cleveland, Ohio, US

Team Facilitator:
Ms. Kako Iwaki
"Real World" Connections
Through Videoconferences

Sponsored by: Learning Technologies Project,
National Aeronautics and Space Administration,
John H. Glenn Research Center, Cleveland, Ohio, USA

Presented by: Ruth Petersen, Educational Coordinator

Glenn Research Center
Learning Technologies Project
April 2002
Research and develop educational products and services that:

- Use NASA Data.
- Use Innovative, Emerging Technologies.
- Serve Formal and Informal Education.
- Serve Lifelong Learners.

Glenn Research Center
Learning Technologies Project

April 2002
Provide Real World Connections

How?
Through the Internet and videoconferencing.

Why?
To excite learners about math, science, and technology.
Beginner's Guide to Aerodynamics

FoilSim II Applet
This is a beta 1.4 version of the FoilSim II program, and you are invited to participate in the beta testing. If you find errors in the program or would like to suggest improvements, please send an e-mail to hansen@grc.nasa.gov.

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Learning Technologies Project

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Beginner's Guide to Propulsion

EngineSim Beta Version 1.5b
This is a beta version of the EngineSim program, and you are invited to participate in the beta testing. If you find any errors in the program or would like to suggest improvements, please send an e-mail to benson@grc.nasa.gov.

Click on component name or part on the figure at the left to obtain more information.

Output Display:
- Photos
- Design Mode
- English Units
- Load My Design
- Resel

Engine Performance:
- Thrust-lbs: 5766
- Weight-lbs: 840
- Fuel-lbm/hrs: 5638
- Air-lbm/Sec: 72

Glenn Research Center Learning Technologies Project

April 2002
Beginner's Guide to Model Rockets

RocketModeler Applet

This is a beta 1.1 version of the RocketModeler program written by Eric Bishop from the Ohio State University. You are invited to participate in the beta testing. If you find errors in the program or would like to suggest improvements, please send an e-mail to benyon@nasa.gov.

<table>
<thead>
<tr>
<th>Launch Rocket</th>
<th>Design</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Length(cm):</td>
<td>Nose Cone Length(cm):</td>
<td>Fin Width(cm):</td>
</tr>
<tr>
<td>33.0</td>
<td>9.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Body Diameter(cm): | Fin Length(cm): | Fin Height(cm): | Number of Fins: |
| 2.5 | 10.0 | 0.0 | Four Fins |

Center of Gravity(cm): | Center of Pressure(cm): | Rocket Mass(g): |
| 19.75 | 12.67 | 84.12 |
NASA Virtual Visits

CP Videoconferencing
ISDN Videoconferencing
Pre- and Post-Conference Activities
PowerPoint Presentations
NASA Virtual Visits Feedback

Scaling the Cosmos

Glenn Research Center
Learning Technologies Project

April 2002
Joe (Kolecki) motivated, challenged, and inspired our students. This has been a wonderful opportunity to excite our kids about learning. Without the technology we would probably never have had the chance to meet and learn from a NASA scientist.

--Instructional Technical Specialist, Richardson West Junior High, Texas
What's ahead for the
Beginner's Guide to Aeronautics?

Bottle Rocket Launcher in 2D.

Bottle Rocket Launcher in 3D.
What’s ahead for NASA Virtual Visits?

Real Time 3D Visualization Experiences from 2D Source Material.

Expansion of Offerings for Pre- and In-Service Teacher Professional Development.

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April 2002
Now... on to the Space Science Team!