OMSI STARS/JASON Project
A Final Formative Evaluation Report

Prepared for
OMSI
OREGON MUSEUM OF SCIENCE AND INDUSTRY

by
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The material is based upon work supported by NASA under award No. NNG05GC89G.
Overview of project from July 2005–August 2006

Objectives:

- Continue to integrate distance-learning strategies to deliver K–8, NASA-linked science curriculum and professional development for teachers, librarians, and community mentors in 12 existing and eight additional rural regions in Oregon.

- Design and deliver an array of community-based programs to stimulate science and technology learning and engagement in rural Oregon communities.

- Based on feedback from Phase 1, improve upon and expand a region-wide network of teachers, public librarians, and other community partners, including higher education, business, and non-profits.

- Communicate with rural communities about project technology needs.

- Provide museum-based and traveling outreach programs to augment programs delivered electronically.

During July 2005–August 2006 steps were taken to:

- Continue implementation through face-to-face workshops, distance learning activities, Web-based materials, and e-mail news;
- Develop OMSI distance learning capabilities;
- Continue recruiting new schools and libraries to increase the impact of the project;
- Compare identified needs of JASON teachers with their perception of the impact of the project;
- Develop partnerships and convene partnership meetings;
- Initiate the Libraries of Eastern Oregon as an active partner;
- Recruit and train T-PROs for each school and identify L-PROs for libraries; and
- Assess impact of project on T-PRO, teachers and schools.

External Evaluation

To determine the effects of the OMSI STARS/JASON project and to solicit recommendations for improvements, external evaluation data was collected from T-PROs and JASON teachers during site visits made in the Fall of 2005 and Winter of 2006 as well as year-end questionnaires. (See questionnaires in Appendix.)

Summary Statement of External Evaluation Data

There is a very high level of satisfaction from both teachers and T-PROs with all aspects of STARS: workshops, technical support, distance learning opportunities, materials, and curriculum. The Monday Memo was identified by all as very useful and appreciated. Once again there was an increase in the number of teachers who report knowing about the STARS/JASON project. In classrooms where STARS/JASON is being used, teachers and students are enthusiastic about the curriculum and the increased use of technology.
Teachers using STARS reported increased hands-on science done in their classrooms (80%), increased interest in teaching science (75%), increased knowledge and understanding of science content (70%), and increased understanding or implementation of scientific inquiry (70%) resulting from using the program. Teachers also reported that as a result of using STARS, their students increased skills in using technology and an increased interest in science, technology, engineering, or mathematics careers. Once again, the greatest obstacles for teachers to using STARS were (1) not having enough time and (2) not having the necessary supplies and equipment.

T-PROs continued having a positive impact on the schools where they worked. T-PROs identified having access to information, sharing information, and organizing curriculum materials for teachers as the most significant benefits they provide for their colleagues and schools. They also felt that more OMSI services and resources were used in their schools because there was an effective stream of information coming from OMSI to the T-PROs. T-PROs mentioned the Monday Memo as a source of good information about resources, workshops, and ideas for themselves and to share with others.

**USING STARS: T-PRO SUMMARY**

T-PROs were recruited during the 2004–05 school year and continued serving in the 2005–06 school year. The responsibilities of the T-PRO included:

- Disseminating information to teachers, administrators, and others in the school;
- Collecting information from teachers, administrators, and others in the school;
- Representing OMSI STARS project in the school and community;
- Helping generate interest in new teachers to participate in the STARS project; and
- Report volunteer hours to OMSI.

The eight T-PROs who completed and returned year-end questionnaires, reported that a total of 380 students used STARS during the 2005–06 school year. They also reported that 23 teachers used STARS. Each teacher presented an average of 10 lessons to students. (However, more teachers used STARS during 2005–06 since only eight schools reported back with evaluation data.)

**Professional benefits:** When asked how the T-PROs felt they benefited professionally from working with STARS, they reported increasing collaborative skills, learning about new resources, using Web sites more often, and knowing more about OMSI resources.

“I appreciated the opportunity to get to know some of the OMSI staff and attend workshops at Hancock Field Station and the workshop in Klamath Falls. The HFS workshop allowed me to visit the site and become acquainted with its curriculum before bringing my class for outdoor school in April 2006.”

“I benefited from working cooperatively with other teachers. Also, taking the time to find additional materials for each topic usually helps me to learn more about the topic.”
“I benefited from sharing ideas with other science and math teachers.”

“I benefited from the information available on-line from OMSI and also sharing this info with colleagues.”

“I was able to talk to other teachers that were using the JASON project weekly. We shared ideas, problems, and information found in the Monday Memo.”

**School benefits:** When asked to report how their teachers and schools benefited from having a T-PRO, T-PROs said they passed on valuable information, organized curriculum materials and lessons, and acted as cheerleaders for STARS by encouraging teachers to try lessons.

“Better access to information about OMSI programs. Several people attended JASON workshop and used JASON materials partly because I encouraged them to do so. I had the JASON student book printed and distributed to all participants of the Klamath workshop.”

“Each year I put together and bound a book of corresponding lessons and experiments that would go with each topic and theme. These lessons cross into other areas such as reading and math.”

“I tried to encourage and assist teachers in implementing the JASON project into lessons.”

“I passed on information to teachers and parents regarding upcoming events and camps with OMSI.”

“More OMSI experiences including JASON and the Outreach program have been a part of this year. Having T-PRO information readily available instead of days later has been a plus. Our situation, this far out in the countryside, makes getting formation in a timely manner difficult. The T-PRO has solved this for us.”

“I completed all the JASON project labs and activities first so teachers got to learn from my mistakes. The school benefited because I felt responsible to represent OMSI. I always read the Monday Memo and shared information with both students and teachers.”

“Teachers benefited from workshop information and dissemination of curriculum materials.”

**Tasks:** All T-PROs reported sharing information with colleagues and sending information back to OMSI when requested. Other activities done by T-PROs were:

- Transmitting information to members of JASON team 87%
- Communicating via e-mail about JASON 75%
- Representing OMSI in their community 50%
Working collaboratively with LEO/public librarian 50%
Attending teacher enrichment sessions, virtual meetings, etc. 50%
Using the Digital Lab to communicate about JASON 37%
Facilitating during distance learning sessions 25%

No T-PRO reported “Facilitating school team during virtual meetings” or “Facilitating the use of videoconference enrichments.”

**Better support for T-PROs:** Overall, T-PROs felt supported by OMSI and all were aware that LEO (Libraries of Eastern Oregon) was an active partner in the STARS project. When asked how OMSI and LEO could better support them, T-PROs suggested:

- “More information on how to promote OMSI programs and help with organizing workshops in our home districts.”
- “Continue answering questions when needed, providing opportunities and materials.”
- “OMSI and LEO are doing a great job supporting schools and science inquiry projects. Visits to classrooms with equipment (telescopes, GPS system) and demonstrations would have been helpful.”
- “Continue the work and keep sending information in “JASON” form for Northwest Expeditions.”
- “Continue providing books to supplement program.”

**Time:** Few T-PROs consistently reported their volunteer hours per month to the OMSI Director of Volunteers. As a result, the process for reporting time devoted to T-PRO responsibilities will be changed in the future. On the year-end questionnaire, T-PROs reported spending a total of 318 hours on T-PRO activities over the 2005–06 school year. The average time per T-PRO was 39 ¾ hours, with a reported high of 144 hours and reported low of 3 hours.

**USING STARS: TEACHER SUMMARY**
Questionnaires were sent to teachers in the STARS Monday Memo on May 8, 2006. Ten teachers completed a questionnaire and sent it back for the external evaluation. Unfortunately, because of the format of the attachment containing the questionnaire, only half of the returned questionnaires contained the entire set of questions. Teachers returning questionnaires represented the following schools:
- Ontario Middle School
- HomeSource
- Oak Grove Elementary
- North Albany Elementary
- Canby
Haines
So. Baker
Buff Elementary
Cove Elementary

**Topics used:** Teachers reported using the following topics/lessons during 2005–06:
- Earth and Space Science
- Physical Science
- Biological Science
- Rockets
- Craters
- Water on Mars
- Weather
- Moon Phases
- Solar System

One teacher commented that she used the labs as a springboard toward student scientific inquiry.

**Obstacles:** The two most common obstacles to teachers using STARS were not having enough time and not having the proper supplies and equipment. Although teachers did not mention lack of technology this year as an obstacle (as in past years), T-PROs reported that statewide testing has restricted the use of computer labs this year.

Comments about obstacles included:

- “The first digital lab wasn’t ready in a timely manner, so it wasn’t available when I needed it. There were other times that the links or JASON Web site presented obstacles.”

- “Lessons not aligned to Oregon Benchmarks.”

- “Students were disappointed with overly touted live videoconference.”

- “Jason online was fair but we were disappointed that we couldn’t scan visuals onto the student pages.”

- “Statewide testing dominating computer labs, lack of computer time in labs.”

- “Gathering materials and adapting lessons to abilities took time.”

- “Preparing materials and my lack of background knowledge to address questions and facilitate exploration of answers that came up in activities.”

- “Being rural, we still have technological issues that keep us from using all of JASON.”
**Changes:** Teachers rated themselves on a five-point scale (5=very high) for seven elements. Below is a comparison of data from 2004, 2005, and 2006. Percentages include teachers who rated themselves as a 3 (so-so), 4 (high), and 5 (very high).

<table>
<thead>
<tr>
<th>Element</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort level using technology in science education</td>
<td>64%</td>
<td>86%</td>
<td>90%</td>
</tr>
<tr>
<td>Use of technology in science education</td>
<td>39%</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>Expertise for teaching science in a multidisciplinary context</td>
<td>60%</td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Knowledge of JASON project</td>
<td>26%</td>
<td>86%</td>
<td>100%</td>
</tr>
<tr>
<td>Comfort with scientific inquiry</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Expertise in using distance learning</td>
<td>29%</td>
<td>67%</td>
<td>70%</td>
</tr>
<tr>
<td>Satisfaction with project</td>
<td></td>
<td>92%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Teachers also indicated that using STARS resulted in the following changes in their classrooms:

- 80% increased hands-on science done in classroom
- 75% increased their interest in teaching science
- 70% increased their knowledge and understanding of science content
- 70% increased understanding or implementation of scientific inquiry
- 50% increased interdisciplinary science lessons
- 50% increased comfort level and use of technology in the classroom
- 40% increased the amount of field research done by students
- 20% increased understanding of the range of careers in science and technology

In 2004, the first year of the project, teachers were asked what they hoped to gain from participation in JASON. At least 70% of the teachers said they wanted to:

- Increase their comfort level and use of technology in the classroom.
- Increase knowledge and understanding of science content.
- Increase the amount of hands-on science done in the classroom.
- Increase the amount of field research being done by students.
- Increase interdisciplinary science lessons.

Data shows that teachers were supported in achieving their goals, except for increasing the amount of field research being done by students.
The two major effects for students mentioned by teachers were:
  Increased skills in using technology.
  Increased interest in science, technology, engineering, or mathematics careers.

T-PROs reported the changes below that took place from the end of 2003–04 school year
to now (2006) with respect to distance-learning capabilities used for JASON
communication purposes.
  • Monday Memo
  • Video Streaming
  • OMSI Web site

Comments:
  “I actually used more last year, as the computer labs were more available and the
physical science portion of the digital lab was not ready during Fall term this year.”

  “Since 2003, we have been communicating more on-line using the e-learning
technologies including Monday Memo and OMSI Web site. When we started
JASON, our needs for the program forced the technology department to make
sure we had as many capabilities as possible. The Monday Memo has also
increased comfort and quality control of Web sites to answer our many
questions.”

80% of the schools reported more comfort with distance learning as a delivery system for
information. This was a significant change since the beginning of the project.

  “We are more comfortable in using the distance learning technology provided by
the JASON project but not for using it in classrooms. We do not have the ability
to use distance-learning opportunities at this school. We need to go to the ESD,
and even then we may not be able to use the facilities.”

  “As it is used, it (distance learning) becomes far more comfortable to use. The
program is dynamic enough to make us want to use distance learning.”

Conclusion:
The rural teachers who participated in the first OMSI/JASON project and last year’s
STARS project have:
  • Increased the use of technology in science education.
  • Increased the use and comfort level of distance learning as a delivery method for
professional development and communication.
  • Increased the use of hands-on science in classrooms.
  • Built partnerships between schools and public libraries.

All participants were very satisfied with the services, professional development, and
support from OMSI. The Monday Memo was identified numerous times as a very
effective method for communicating with T-PROs and teachers.
Appendix:
Questionnaires
2006 Questions for T-PROs

Once again it is time for year-end evaluation for the OMSI/JASON project. Thank you for your support as a T-PRO. We greatly benefited from your participation and leadership. Please complete this questionnaire by May 26 and return to Joy Wallace.

Name:_________________________________________________

School:________________________________________________

E-mail_________________________________________________

1. As the T-PRO for your school, how have you benefited professionally?

2. How have your school and team benefited by your being a T-PRO this year?

3. The following items were included in the T-PRO job description. Which activities did you actually do?
   A. Represented OMSI in your community?   ___ yes ___ no
   B. Communicated via e-mail about JASON?   ___ yes ___ no
   C. Transmitted information to members of your team? ___ yes ___ no
   D. Worked collaboratively with LEO/public librarian? ___ yes ___ no
   E. Used the Digital Lab to communicate about JASON? ___ yes ___ no
   F. Collected information and sent it to OMSI? ___ yes ___ no
   G. Facilitated your school team during distance learning sessions? ___ yes ___ no
   H. Facilitated your school team during virtual meetings? ___ yes ___ no
   I. Facilitated the use of videoconference enrichments? ___ yes ___ no
   J. Attended teacher enrichment sessions, virtual meetings, etc. ___ yes ___ no

4. How can OMSI and LEO (Libraries of Eastern Oregon) better support T-PROs?

5. How many hours have you volunteered as a TPRO since July 1, 2005? TPRO volunteer hours can include time spent attending science-related professional development workshops/videoconferences, distributing information from OMSI to faculty/staff at your school, providing information and support to local teachers using online OMSI or NASA resources, attending meetings of T-PRO representatives in your region, or participating in discussions or surveys to enable OMSI to better meet needs of classroom teachers.
   Number hours_____

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PHASE 3: SCHOOL INFORMATION 2006
NASA Distance Learning Project for Rural Oregon - STARS

District: ________________________________

School: ________________________________

T-PRO: ________________________________

Teachers who actually used JASON “Mysteries of Earth and Mars” during 2005-2006:

Teachers names | About how many lessons were taught?
-----------------|----------------------------------

_________ | ________

_________ | ________

_________ | ________

_________ | ________

How many teachers used the “Disappearing Wetlands” curriculum in 05-06? __________

What things about your school or district facilitated or inhibited the use of JASON this year? Facilitated | Inhibited

Professional development with distance learning:
Please describe specific changes that took place from the end of the 2003 school year to now (2006) with respect to distance-learning capabilities you used for JASON communication purposes. (This can include videoconferencing as well as other e-learning technologies, such as Monday Memo, video streaming, or OMSI website). Changes could include equipment, set up, use of the lab and the comfort level of teachers.
1. As a result of participating in JASON, are members of your team more comfortable with using **distance-learning** as a professional development tool? _____ yes _____ no Why or why not?

2. As JASON was being implemented, did teachers on your team benefit from the professional development offered by OMSI? _____yes _____no Comments:

3. As JASON was being implemented, how useful was the JASON/OMSI website? _____ very _____ somewhat _____ not useful Comments:

4. How satisfied was your team with the support and services from OMSI? (Please circle one.)

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Thank you for your support to OMSI and participation in STARS!

Please return to Joy Wallace at 3738 NE Prescott, Portland, OR 97211 or joy.wallace@comcast.net