OMSI Distance Learning Project/JASON
A Front-End Evaluation Report

Prepared for

by
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I. Overview of project to date:

Goals:

The goals for the first year of the Distance Learning Project/JASON for Eastern Oregon are:

- Refine, adapt, and integrate distance-learning strategies to deliver NASA-linked science curriculum and professional development to 12 rural regions in Oregon.
- Create a region-wide network of teachers and public librarians as mentors and ambassadors.
- Extend the technology infrastructure to provide access to Oregon's rural K–12 schools and communities.
- Provide museum-based and traveling outreach programs to extend and enhance programs delivered electronically.

During the first four months (May to August 2004) of actual project implementation, steps were taken by the project team to begin each step as well as to build the infrastructure to support the project. Implementation actually began on June 1 when funding arrived.

Strategies

The strategies identified for year one to implement the project include:

- Align programs with Oregon state benchmarks and the needs of Oregon's rural K–12 schools and communities.
- Design, recruit, and support Regional OMSI Science Team (T-PRO) network.
- Design and retrofit distance-learning studios at OMSI.
- Integrate distance-learning delivery into NASA-linked science curriculum, enrichments, and professional development.
- Meet quarterly with partners to build strategies to support Oregon's rural K–12 community.
- Deliver NASA-linked programs with distance learning components to 12 rural regions: three in Lane County, one in Klamath County, and eight in Eastern Oregon.

Evaluation:

The evaluation methods identified for phase one are intended to set the stage for designing future activities to meet the needs and interests of participating teachers, schools, and students. Evaluation methods include:

- Assess needs and interests related to the program content in nine pilot regions.
    - Interview teachers and administrators in nine regions.
    - Interview public librarians in six regions.
- Document how programs, trainings, and enrichments align with benchmarks and standards according to established criteria for alignment

Summary Statement

The project began in earnest on June 1 when funding arrived. The start-up date was about six weeks later than anticipated. One consequence of this delay was that gathering

information from teachers was rushed, happening right at the end of the school year. Another consequence was that all phases of distance learning had to be delayed until funding was available to purchase equipment, design and retrofit the distance-learning studio, and design the Web site. However, members of the project team are now moving quickly to implement each part of the proposed project.

II. Profile of School Teams (See form on page 11 in Appendix.)
At the end of May 2004, the external evaluator visited teachers and principals from 14 schools in ten Eastern Oregon school districts. The purpose of the visits was to:

- Inform educators in Eastern Oregon about the JASON project,
- Clarify the expectations for participating teachers and schools,
- Identify professional goals of participating teachers,
- Identify student learning goals, and
- Assess technology capabilities.

Another purpose of the visits was to identify school team leaders who may become Teacher Partners Regional Outreach (T-PRO). These individuals will become the official leaders for school teams, as well as being local resource people and ambassadors for the project. T-PROs will have a special volunteer relationship with OMSI that entitles them to the regular benefits of a volunteer.

School Profiles
Profiles for the school teams are listed below. Profiles include the name of the school, location, number of people on the team, comments about science education and technology at the school, team goals, and information about distance learning labs.

McNary Heights Middle School—Umatilla

Six team members—3 teachers, 1 librarian, 1 principal, 1 vice principal

Teachers have from 60–100 minutes in the afternoon to teach something other than PE, Literature, and Math. The teachers are concerned about doing "enough" science, but everyone is eager to be involved in the JASON project. The librarian is looking for effective ways to support the teaching of science, sharing resources, and teaming with teachers. The team is looking for:

- More collaborative projects between library and classrooms
- Ways to increase enthusiasm in science
- Ways to get more girls involved in science
- Strategies for allowing students to experience "real" science by doing field work
- Ways to involve the community in presenting science to students and being involved in fieldwork activities

Technology
VTEL lab in high school. It does have a permanent set-up.
Teachers have from 1–6 computers in classrooms. The library has 30 Internet-connected computers. Most of these computers were purchased in 1999 and some are only 56K machines. There will be a new computer lab in the fall with 30 new Pentium 4 Gateway computers.

Irrigon Elementary (K–6)—Irrigon

Six team members, all teachers: 5th and 6th grade, Title 1. One teacher is leaving to go to the high school, and one new teacher will join the team in the fall. Fifth grades have self-contained classrooms. Sixth grades are not self-contained but have science specialists.

The team is looking for:

- Hands-on science applications
- Ways to "take students somewhere else"
- Methods to increase student interest in science
- Ways to increase student awareness of the environment

Technology

The functioning VTEL lab is currently at Boardman High School. The middle school has all the VTEL equipment, but it is not connected and no one knows how to work it. Next fall, the VTEL lab will be used to offer HS courses to students, so this situation will change. Students have free access to school computers with parental permission. All computers were purchased in 2004 and are Dell computers. There are 17 computers in a lab, five in the library, and two per classroom.

Condon Elementary School (K–8)—Condon

Five team members—teachers of grades 5–8. One team member has used C-PUP and is excited about another engaging science curriculum. One teacher feels very weak in science, and especially physical science, and hopes JASON will strengthen science teaching. The team is looking for:

- Multidisciplinary science
- New approaches to teaching
- Ways to increase the use of technology

Technology

VTEL lab is at ESD and HS (Jill Layton at high school). There are 5–6 IBM computers in the library, and two IBM computers in each classroom. The team expects computer access to be difficult but hopes they will get a grant to update and improve their computers.

Fossil Elementary (K–8)—Fossil

Team consists of the one 7th–8thgrade teacher. She has a strong science background and is very excited about being involved in JASON. She will have nine students next year. She is involved because she wants:

- Hands-on activities for science
- To use more technology in teaching science
- To have students "talk" to real scientists
- To use local wetlands for field work

Technology

Top quality VTEL lab is behind the high school. It contains four computers and is used for HS classes. The ratio of computers to students is 1:1. School computers are less than five years old. The computer lab has 12 Internet-connected computers. The school has requested five new computers.

Spray (K–12)—Spray

The team consists of two people: librarian and 8th–12thgrade science teacher. The librarian is VERY enthusiastic about this project and is eager to work with the science teacher and his students.

Technology

Five-year-old VTEL lab set up in library and is used every period of every day for classes. Spray will soon have two VTEL labs going on at the same time and will be getting a faster line to deliver programming. The librarian operates the lab. The library has a computer lab with 20 new computers purchased this year. All are connected to the Internet.

Humbolt Elementary (K–5)—Canyon City

Team consists of two 5th grade teachers. Both have strong science backgrounds. One is very familiar with VTEL because she got her Master's from Eastern and used VTEL for many classes, including operating the equipment. The team is looking for:

- Hands-on activities for science
- Ways to increase inquiry experiences for students.

Technology

The VTEL lab is at the ESD. The computer lab has 18 Internet-connected IBM computers that are two years old. The ratio of computers to students is 1:1.

Mitchell (K–12)—Mitchell

Team includes two teachers—3–6th grade and 7–12th grade science, plus the principal. The team is very excited about the potential of connecting their students to "real science" through an exciting curriculum. They are looking for:

- Ways to get students who live in Mitchell and are isolated more engaged with science and things happening outside this rural area
- Connections with real scientists
- Hands-on activities that will increase the relevancy of science and connect to real science
- Strategies to prepare students for CIM inquiry

Technology

The three-year-old VTEL lab is permanently set up in a studio and is used 5 periods every day. The oldest computers in the school are five years old. There is almost a 1:1 ratio of computers to student of IBM computers. There are four computers in the library, the computer lab has 15, and the science room has four for 6–8th grade science.

Hines Middle School (6–8)—Hines

At this time, the team consists of five teachers—four middle school and one elementary teacher. This team is VERY excited, especially about the multidisciplinary possibilities. They are very excited and interested in the rainforest and were somewhat disappointed to find out that next year's topic is wetlands. They talked about art projects like murals, social studies activities, etc., in addition to the science. One teacher knows JASON and is a real fan of the program. The school is moving to trimesters next year, and the team will try to have one focus on JASON. They are looking for:

- Opportunities to e-mail with scientists
- Ways of making science more "real"

Technology

The VTEL lab is located in an out-building at the high school. There are 15 DSL computers available to students that are not in classrooms. The ratio of computers to students is 2:25. The ESD recently donated Windows 2000 computers to the school. Two new laptops have been purchased in order to use software on CDs. The school is getting a projection system.

Baker 5J School District

This team is huge, very well supported, and organized because of district office and administrative involvement. There are 23 team members from South Baker Elementary (6), Keating Elementary (2), North Baker Elementary (7), Haines (2), Brooklyn (4), district office (2), and town library (1). Reasons for being involved included:

- Increase students' interest in science
- Strategies for increasing inquiry lessons
- Increase hands-on science activities
- Strategies for integrating curriculum and increasing interdisciplinary lessons
- Increase the use of technology by students

Technology

The VTEL lab is located at the high school. The Technology Director for the district is part of this team and knows how to use the equipment. Each classroom has at least one Pentium 3 computer. Each school has a computer lab with 12 Pentium 4 computers with Internet connection.

La Grande Middle School (6–8)—La Grande

The team consists of two science teachers and the principal. Teaching staff is divided into two teams for teaching language arts, math, science, and social studies, and all students belong to one of these teams. Although only the science teachers are involved now, they expect more of their colleagues to join JASON as time goes by, and everyone sees how wonderful it is. By being involved, the team hopes to:

- Work with the language arts teachers to offer integrated units
- Increase the use of technology by students
- Use local wetlands for fieldwork and activities

Technology

The 1–2-year-old VTEL lab is at the high school. It will accommodate 40–45 people and has a permanent studio set-up. Science classrooms have eight 6-year-old IBMs that are connected to a server. Each teacher has a new Mac for his or her use. The computer lab has 25 Strut computers (refurbished PCs from an Intel program) that are connected to the Internet. The school is hoping for new computers sometime soon.

Summary Statement

Overall teachers indicated much enthusiasm about participating in the JASON project. They view the theme of this year's project (wetlands) very accessible and interesting to students. They also view this project as a way to provide isolated rural students an opportunity to experience "real" science via fieldwork, expand students' view of science careers, and connect students with scientists and students outside Eastern Oregon. Teachers in Eastern Oregon see the JASON project as an excellent resource and a way to greatly expand science education and technology opportunities for their students.

III. Assessment of Teacher and School Needs

In late May and early June, 12 schools were visited to disseminate and collect data. Each teacher was provided with a one-page description of the project to help clarify the expectations of participating schools and teachers. Each teacher completed an individual survey about personal professional goals for participating in the project, described their current situation related to using technology in science, and identified professional development/student learning goals based on Oregon Science Benchmarks. (See page 12 in Appendix for questionnaire.)

Data Summary about Teachers:

As a result of participating in Distance Learning Project/JASON for Eastern Oregon, a significant percentage of teachers want to increase the use of hands-on science strategies in lessons, increase interdisciplinary science lessons, promote field research by students, and increase technology use in the science education they offer their students.

87% want to "Increase the amount of hands-on science done in my classroom."
82% want to "Increase interdisciplinary science lessons."
75% want to "Increase the amount of field research being done by my students."
70% want to "Increase comfort level and use of technology in the classroom."
70% want to "Increase knowledge and understanding of science content."

When asked to describe the current situation related to teaching science, teachers indicated that overall their comfort level using technology in science education is fairly high (64% indicated so-so to very high), but few of the same teachers are actually using technology in science lessons (87% indicated so-so to very low). Teachers overall indicate they have the expertise to teach science (70% indicated so-so to high), and 30% of the teachers feel prepared to teach interdisciplinary science, 30% feel so-so, and 30% feel not so prepared. Nearly all the teachers indicated a low level of knowledge about the JASON project (91% so-so to very low), and few teachers indicated they have expertise in using distance learning (87% indicated so-so to very low).

The Student Learning Goals that teachers wish to improve are:

Scores on the Oregon Science Knowledge and Skills test

Benchmark 2 (Grade 5)	55%
Benchmark 3 (Grade 8)	45%

Science Inquiry Scoring Guide

Benchmark 2 (Grade 5)	55%
Benchmark 3 (Grade 8)	45%

Beyond the Oregon Science Benchmarks, teachers are also looking to the project to

Increase student skills to use technology	77%
Increase interest in science, technology, engineering, and math careers	80%
Increase participation in science fairs/student research	60%
Increase enrollment in or intention to enroll in optional or advanced science classes	45%

Some additional reasons added by teachers on the survey under "Comments" are:

- ✓ To hear students say, "science is fun"
- ✓ To have students experience real science in real time
- ✓ To increase knowledge of scientific application in a "real world" setting
- ✓ To create exciting hands-on, inquiry-based instruction
- ✓ To develop collaborative projects with students, teachers, and librarians
- ✓ To nurture students to like to learn, no matter what the topic

Summary Statement

Data collected from school teams and individual teachers will easily allow the project to assess how well we are meeting the needs and interests of participants in Distance Learning Project/JASON for Eastern Oregon. With the baseline data, the project can use questionnaires, monitor use of the Web site, and site visits to keep apprised of the alignment between project activities and teachers' satisfaction.

IV. Building the Technology Infrastructure

Web site:

The project Web site provides an electronic framework for project school teams and project staff to be virtually connected as well as to provide participants access to various message boards, resources, and tools. Five different user groups have access to the Web site:

- The professional usertype (for non-TPRO teachers and librarians participating in the program) gives access to all PD tools such as message boards and—when they are available—streaming video, virtual office hours, curriculum resources, etc., in addition to the interface for submitting data for the digital labs.
- The student usertype will give access to the interface for submitting data collected for the digital labs.
- The TPRO usertype will give access to all professional resources, plus a section for the TPROs to log their volunteer project hours.
- The OMSI Staff usertype includes all of the above and will also include a page for viewing reports of TPRO hours as well as a page for viewing reports of site visits.
- The Siteadmin usertype gives access to all of the above, plus the ability to create, edit, and delete users.

OMSI Distance Learning Lab:

The Distance Learning Lab at OMSI has been retrofitted and is operational. This lab will now be used for all distance-learning components of the project.

V. Involvement of Libraries of Eastern Oregon

Libraries of Eastern Oregon (LEO) is participating in the OMSI/NASA project because they consider OMSI an extremely valuable partner as public libraries and schools in rural Oregon step up to meet the future. These rural public libraries are striving to increase distance-learning opportunities to meet the demands of the twenty-first century and OMSI can assist the regions' libraries to increase these opportunities. OMSI's excellent reputation lends credibility to struggling public libraries in the rural communities—that is, by being able to offer the JASON project there is "more" available and the public perception of the libraries is improved. Perhaps most important, the libraries serve as a direct venue by which OMSI can deliver JASON programming to a ready audience: rural communities.

LEO's next steps will be to assure successful implementation of the project at rural school districts and public libraries, helping to develop future partners, conducting public relations in the rural area to help create awareness and interest in the project, seeking additional outside funding for classroom materials to supplement the programs, and assisting OMSI in coordinating external partner meetings.

Librarians interviewed during the visit to Eastern Oregon participating schools indicated that their goals are to:

- Increase collaboration with teachers and better serve students
- Help offer rural communities a link to an excellent science resource (JASON)
- Increase collaborative work with OMSI

VI. Next Steps

A. JASON Workshops

The first JASON workshop for this project was conducted on August 19 and one Science of Lewis and Clark workshop was conducted on August 20 in Baker City for 21 teachers from six schools from the Baker City and LaGrande school districts. (See page 13 in Appendix.) This distance-learning experience was well received. Additional workshops are being scheduled for the other Eastern Oregon schools later in the school year.

B. T-PROs

As soon as school begins and school team members are firmed up, project staff will recruit T-PROs. Among other tasks, these individuals will provide leadership for school teams and be a local ambassador for the project.

C. Partnership Meeting

Community Partnership meetings are currently scheduled for September 13 and 14 and are being organized by Libraries of Eastern Oregon.

D. Libraries of Eastern Oregon

The Libraries of Eastern Oregon (LEO) is developing grants to purchase supplementary resource books and novels that are part of JASON. The grant narratives for the books are nearly complete and applications will be submitted to funding agencies soon. This component will help increase interdisciplinary JASON-related lessons by making materials readily accessible.

E. Evaluation

The next steps for external evaluation will be to use data from the following to assess project implementation, use, and usefulness to teachers:

A. Monitor teacher satisfaction with project support and services through e-mail questions to T-PROs
B. Monitor use of the project Web site by T-PROs and school teams
C. Summarize and analyze workshop evaluations
D. Conduct school visitations to document actual use of JASON curriculum and materials

Appendix A

OREGON MUSEUM OF SCIENCE AND INDUSTRY

Date of visit: _____

PHASE 1: INFORMATION
NASA Distance Learning Project for Rural Oregon

District: _____

Contact person: _____
Schools and Teachers involved:

Schools Teachers E-mail

_____

_____

_____

_____

_____

Location of Professional Development sessions:

Technology Capabilities:

PD site –

Age of available equipment: _____

___ 2 Svideo monitors
____ Audio Push microphones
____ Document camera
____ Push-to-talk camera control system
____ Camera
____ T120 Appleshare and PenPal Graphics with NetMeeting (optional)
____ Good quality lighting
____ Good quality sound from equipment

____ Does sit have a permanent studio set-up?

Classrooms –

____ #Students per computer
____ Year computers were purchased
Brand of computers _____

Processor speed _____
____ Current version of Internet Explorer or Netscape Navigator
____ Macromedia Flash Plugin
____ Webcam
____ T1 Internet connection

OREGON MUSEUM OF SCIENCE AND INDUSTRY

Teacher Questionnaire

District: _____

Name: _____ School: _____

Goals: As a result of being involved in this project, I hope to:

(Check all that apply.)

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

Current Situation:

Please use 5= very high; 4= high; 3= so-so; 2= low; 1= very low

My current comfort level using technology in science education is _____.
Currently my use of technology in science education is _____.
My current expertise for teaching science now is _____.
My current expertise for teaching multidisciplinary science is _____.
My current knowledge of the JASON project is _____.
My current expertise in using distance learning is _____.

Professional Development/Student Learning Goals

The Student Learning Goals that I wish to improve are: (check all that apply)

___ Scores on the Oregon Science Knowledge and Skills test
___ Benchmark 2 (Grade 5)
___ Benchmark 3 (Grade 8)

___ Science Inquiry Scoring Guide
___ Benchmark 2 (Grade 5) – Designing an investigation; Collecting and presenting data.

___ Benchmark 3 (Grade 8) – Designing an Investigation; Collecting and presenting data; Analyzing and Interpreting results

____ Increase skills to use technology

___ Increase interest in science, technology, engineering and/or mathematics careers

___ Increase participation in science fairs/student research

___ Increase enrollment in or intention to enroll in optional or advanced science classes

___ Other: _____

_____

JASON Wetlands Workshop Agenda

8:00-9:00	**Registration**
9:00	Welcome, Introductions and JASON Project Overview *Blair Baldwin, JASON Coordinator* *Dr. Marilyn Johnson, Director of Museum and Teacher Education*
9:15	JASON Expedition: Disappearing Wetlands Overview and Curriculum Walk-through *Dr. Marilyn Johnson*
9:45	Think Like A Scientist! Hypothesis-based Learning Activities-Units 1, 2, & 3 *Blair Baldwin*
10:15	Break
10:30	Unit 1: Testing for Density and Salinity *Jake Ashcraft, Lead Educator, Chemistry Lab*
11:30	Unit 1: Build a River *Sue Wu, Lead Educator, Earth Science Hall*
12:30 – 1:15	**Lunch**
1:15	Team JASON Online (TJO) *Jesse Hampton, Educator*
2:30	Unit 2: How Many Nutria Are Too Many Nutria? *Scott Pattison, Educator, Featured Hall*
3:30	**Break**
3:40	Observing Invertebrates – Unit 2 Fieldwork in Your Neighborhood *Scott Pattison, Educator, Featured Hall*
3:45	Wrap up and discussion; Certificates; Credit Requirements; Clock Hours; Ongoing Communications
4:00 - 4:30	Optional Novels/ Art/ Culture/ Primarily JASON Open House, Technology Tutorial, JASON Question & Answers