

*OMSI Distance Learning Project/JASON
A Formative Evaluation Report*



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Overview of project for September 2004–July 2005:

Goals

The goals for the Distance Learning Project/JASON for Rural 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 September 2004–July 2005 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 to increase the impact of project;
- ✓ Compare identified needs of JASON teachers with their perception of impact of project;
- ✓ Develop partnerships and convene partnership meetings;
- ✓ Involve Libraries of Eastern Oregon;
- ✓ Recruit and train T-PROs for each school; and
- ✓ Assess impact of project on T-PROs, teachers, and schools.

External Evaluation

To determine the effects of the OMSI 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 Spring 2005 and year-end questionnaires. (See questionnaires in Appendix.)

Summary Statement of External Evaluation Data

There is a high level of satisfaction from teachers and T-PROs with all aspects of the JASON project: workshops, technical support, distance learning opportunities, materials, and curriculum. Compared to 2003–04, in 2005 there is an increase in the number of teachers who report knowing about the JASON project...so the word is getting around. In classrooms where JASON is being used, teachers and students are enthusiastic about the curriculum and the increased use of technology.

T-PROs are having a positive impact in the schools where they have been identified and trained. The impact results from having an effective means of communication between OMSI and the schools and for having a JASON advocate in the school and community. All T-PROs are enthusiastic users of the JASON curriculum, so it is possible for other teachers to observe lessons or hear about lessons from students and the T-PRO. T-PROs are also committed to increasing the number of teachers who use JASON. They are being effective change agents in their schools.

Teachers using JASON (including T-PROs) report using more hands-on inquiry lessons, some for meeting Oregon Benchmarks. They also report increasing the use of technology in science education by 67% and increasing their comfort level for using technology in science education. According to 2003–04 data, 77% of teachers surveyed wanted to increase their students' use of technology, so the JASON

project is a vehicle for meeting this need. The project has also had an impact on technology capabilities in JASON schools. Many reported new updates in technology, increased assistance from technology specialists, and new professional knowledge about technology.

JASON teachers (and T-PROs) reported gaining a greater comfort level using distance-learning technology over the year. As one teacher stated, “Actually experiencing this technology is more useful than reading/hearing about it.” Seventy-five percent of T-PROs reported that their team is now more comfortable using distance learning as a professional development tool than last year. Teachers see distance learning as an effective means for participating in workshops and communicating with OMSI.

USING JASON: T-PRO Summary

T-PROs were recruited during the 2004–05 school year. The goal was for each JASON school to have one T-PRO who would:

- Disseminate information to teachers, administrators, and others in the school;
- Collect information from teachers, administrators, and others in the school;
- Represent OMSI JASON project in the school and community; and
- Help generate interest in new teachers to participate in the JASON project.

The first challenge was to find one person in each school to commit to being a T-PRO. The second challenge was to get each T-PRO to complete an on-line T-PRO training package. The incentive for completing the training was a special T-PRO OMSI volunteer vest. In February 2005, fifteen JASON schools had an identified, trained T-PRO working closely with the OMSI staff team and representing the project in their communities. Most were interviewed during school site visits in Spring 2005 about using distance learning opportunities, prospective partners, and how OMSI could better support them. In May 2005, questionnaires were e-mailed to all T-PROs asking for feedback about the T-PRO experience and the impact of JASON on science and technology education. There were two T-PRO questionnaires sent out: one for feedback related to impact on T-PROs and the other related to the effect on the school by participating in the JASON project. (See Appendix.) The T-PROs from eight schools Echo, Haines, So. Baker, Irrigon Elementary, Keating, Brooklyn, Laurel, and Riverside) returned their questionnaires. .

These eight T-PROs reported the involvement of a total of 17 teachers in their schools. This number is short of the 90 teachers desired, however not all T-PROs reported (only 8 out of 15) so it can be speculated that more teachers used JASON than those documented by the returned questionnaires. Furthermore, teachers are using JASON in schools without T-PROs. It also shows that not all teachers who attend a JASON workshop immediately use the curriculum.

T-PROs reported that a total of 62 JASON lessons were conducted over the 2004–05 school year, the average number of lesson per teacher being nine.

One hundred percent of the T-PROs distributed information to others in their schools as identified as a deliverable task. T-PROs, JASON teachers, and OMSI staff agree that T-PROs add value to the program. T-PROs are seen as the JASON leaders in schools and a conduit of information to and from OMSI.

Comments from T-PROs on questionnaires about school, district, and team:

1. What things about your school or district facilitated the use of JASON this year?

- Working with local public libraries for technological learning sessions.
- Funding provided through grants.
- District technology director facilitated the live broadcast.
- Technology support.
- Vtel access.
- Workshops, group meetings, supplies purchased, interest in promoting JASON.
- DVD player, laptop with overhead, Star lab, time to train and meet.
- Adequate computer resources.
- New laptop computers.

2. What things about your school or district inhibited the use of JASON this year?

- Outdated technology.
- Lack of time to prepare JASON lessons and for students to do JASON lessons.
- Lack of supplies for water experiments.
- Lack of available time on computers.
- Lack of video conferencing capabilities.
- Lack of time to integrate JASON into science curriculum.

3. Changes from 2003 to now with respect to distance-learning capabilities.

- The Vtel workshop was powerful, facilitating the use of the program.
- Using the online portion was the most powerful piece.
- Technology use increased as students used the simulations in the classroom and online journaling in the lab.
- More hands-on equipment to use.
- More time with hands-on inquiry method science.
- Comfort level for using technologies and science projects has increased.
- New computers, computer lab updated, familiarity with formats.

4. As a result of participating in JASON, are members of your team more comfortable with using distance learning as a professional development tool?

75% YES

25% (one T-PRO) NO

- Familiarity with use has been helpful. Actual *use* is powerful.
- Good experience to communicate with OMSI/JASON staff.
- Vtel removes the obstacle of limited access to workshops.
- Increased awareness to what we can do with the technology we have.

5. As JASON was being implemented, did teachers on your team benefit from the professional development offered by OMSI?

100% YES

- The professional development was well thought out and interesting to us.
- The class that was offered here in August made us more comfortable with the lessons, and therefore we were more inclined to use the materials.
- Although many teachers did not implement JASON in their classrooms, I feel like regardless of levels of implementation, everyone benefited because they had exposure and that is the first step to creating "buy in."

- Staff was knowledgeable and excited about lessons and this was transferred to us.
- Hands-on experiments during training were especially helpful.

6. As JASON was being implemented, how useful was the JASON/OMSI Web site?

75% Very Useful

25% Somewhat Useful

- This is the aspect of JASON I used least—mainly because this was my first year working with the JASON project and there were so many elements to implement that it was hard to fit all the pieces in with the district-adopted science curriculum.
- We used the JASON Web site extensively for on-line journaling.
- Web site was my favorite part! My students loved the journal and chose to edit their work.
- We all enjoyed the streaming video and Perpetual Wetland Machine.
- It's good to know we have some place to go for backup.
- This would have been more useful if our lab had been up and running before February.
- JASON Web site was very helpful.

7. How satisfied was your team with the support and services from OMSI?



75% (6)



25% (1)

EFFECTS OF BEING A T-PRO

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

- I've become better acquainted with OMSI and how it can be a resource for me as a teacher.
- The independent research has been challenging as well as rewarding. I have enjoyed sharing ideas with my colleagues and further integrating technology into my classroom.
- I am much more comfortable with technology and distance learning. My lessons are more enriched for science and connected curriculum.
- My horizons have been expanded.
- I have used much of the information/activities on the Web site in my classes, which makes them more productive, and me a better teacher.
- It has been nice to become more familiar with OMSI as a remote resource for classroom learning.
- I know more about OMSI and programs offered to teachers.
- I found myself spending more time thinking about great things to do so I could pass them on.

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

- The sharing of ideas has made more teachers interested in JASON. Mostly we are seeing more use of technology!!
- We participated in activities we wouldn't have.
- I have received information that I have been able to disperse to my peers.
- I have forwarded all information on to my school team for their use. I know that they used some of it, but finding time to explore the information available is a challenge for teachers.
- I have been able to share several resources that OMSI has made available, as well as try out some of the new technological learning situations this year. The positive response my class has had to OMSI's presentations has helped the rest of the staff feel more open to this kind of learning opportunity.
- We are more informed about what OMSI has to offer.

- We had more information about classes offered by OMSI.
- The school has been included in many opportunities that they otherwise would not have known about.

3. Activities done by T-PROs

(Activities included in the job description for T-PRO: represent OMSI in community; communicate via e-mail about JASON; transmit information to members of school team; work collaboratively with LEO/public librarian; use the Digital Lab to communicate about JASON; collect information and send it to OMSI; facilitate school team during distance learning sessions; facilitate school team during virtual meetings; facilitate the use of videoconference enrichments; attend teacher enrichment session, virtual meetings, etc.; and attend virtual T-PRO training.)

Every activity included in the T-PRO job description was done by at least three people each. It was not recommended that any activity be eliminated from T-PRO responsibilities.

Activities done most often by T-PROs

100% reported communicating about JASON via e-mail

80% reported transmitting information to members of JASON; attending teacher enrichment sessions, virtual meetings, etc; and attending virtual T-PRO training

Activities done least often by T-PROs

40% facilitating school team during distance learning sessions and facilitating the use of videoconference enrichments

30% facilitating school team during virtual meetings

4. How can OMSI better support T-PROs?

- Development adaptations for lower grades.
- Respond more promptly.
- Disseminate a list of T-PRO contact information so they can communicate and support one another.
- Update the Web site and change it periodically for classroom use.
- Keep sending information via e-mail, good for trainings or meetings for those far away.
- Keep sending the info about OMSI programs.
- Convene a session for JASON users to brainstorm and share ideas on how to encourage others to get involved in JASON.

SUMMARY OF INPUT FROM TEACHER

T-PROs were asked to disseminate questionnaires to (a) all teachers who used JASON to document the impact of JASON or (b) to disseminate questionnaires to teachers who did not use JASON to document reasons for non-use. Twenty-four Teacher questionnaires (see Appendix) were returned from the following schools:

Mitchell (1)

Klamath (1)

Hines (1)

Riverside Jr. & HS (1)

Keating (1)

Haines (1)

So Baker (1)

Keating (1)

Laurel (3)

Brooklyn (4)

Madras (4)

Irrigon (5)

Of the questionnaires returned, 17 used JASON and 7 did not use JASON. The reasons for **not using JASON**:

1. Lack of time'
2. Lack of training' and
3. Lack of technology.

Impact on teachers from using JASON Curriculum:

As a result of being involved in this project, 86% of teachers indicated a very high to so-so level for comfort using technology in science education. In 2004 evaluation, 64% said very high to so-so for comfort level, indicating a 22% increase in *comfort level in using technology* in science education.

As a result of using the JASON curriculum, 80% indicated a very high to so-so level for currently using technology in science education. In 2004, 13% said very high to so-so for using technology, indicating a 67% increase in *technology use* in science education.

This year, 86% of teachers indicated a very high to so-so level for knowledge of the JASON project. In 2004, 9% said very high to so-so for knowledge of JASON project, indicating a 77% increase in *knowledge about JASON*.

As a result of participating in the distance learning JASON project, 67% of responding teachers indicated a very high to so-so level for expertise in using distance learning. In 2004, 13% responded similarly indicating a 54% increase in *expertise in using distance learning*.

Ninety-two percent of responding teachers indicated *satisfaction* with the project.

Teachers' Desired Impact on students of using the JASON Project:

According to questionnaires, 52% of responding teachers indicated that their students had increased skill in use of technology. In 2004, 77% of teachers surveyed *wanted to increase their students' use of technology*.

Seventy percent of responding teachers indicated that their students had increased their interest in science, technology, engineering, or mathematics careers. In 2004, 80% of teachers surveyed *wanted to increase student interest in science, technology, engineering, /or mathematics careers*.

Seventeen percent of responding teachers indicated that their students increased participation in science fairs/student research/out-of-school science or technology activities. In 2004, 60% of teachers surveyed wanted to increase this participation. However, science fairs/out-of-school science or technology activities have not been a focus of JASON during this year.

Involvement in JASON activities: No teacher responding participated in the museum-based camp in.

Teachers were asked to indicate in what JASON activities they had participated and to rate the success of each. Below is a rank order of the activities based on teacher use, beginning with the most used (video lab) as well as an indication of the success of each.

Rank order of activities based on use

1. Video lab
2. Professional development
3. Digital Lab
4. Web-based tools
5. Electronic support by Blair Baldwin
6. Distance learning labs

Success of each

- Great
Better than OK
Great
Better than OK
Great
Better than OK

APPENDIX

T-PRO QUESTIONNAIRES

TEACHER QUESTIONNAIRE

SCHOOL SITE VISIT FORM



2005 Questions for T-PROs

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. Represent OMSI in your community? ☐ yes ☐ no
 - B. Communicate via e-mail about JASON? ☐ yes ☐ no
 - C. Transmit information to members of your team? ☐ yes ☐ no
 - D. Work collaboratively with LEO/public librarian? ☐ yes ☐ no
 - E. Use the Digital Lab to communicate about JASON? ☐ yes ☐ no
 - F. Collect information and send it to OMSI? ☐ yes ☐ no
 - G. Facilitate your school team during distance learning sessions? ☐ yes ☐ no
 - H. Facilitate your school team during virtual meetings? ☐ yes ☐ no
 - I. Facilitate the use of videoconference enrichments? ☐ yes ☐ no
 - J. Attend teacher enrichment sessions, virtual meetings, etc. ☐ yes ☐ no
 - K. Attend the virtual T-PRO training? ☐ yes ☐ no
4. Which of these activities should T-PROs NOT continue doing? Please list letters of items.
5. Which of the above activities should be changed?
6. How can OMSI better support T-PROs?

PHASE 2: INFORMATION 2005
NASA Distance Learning Project for Rural Oregon
To be completed by T-PRO

District: _____

School: _____

T-PRO: _____

Teachers who actually used JASON during 2004-2005:

Teachers names

How many lessons were taught?

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 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 message boards. Changes can 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.)





2005 Year End JASON Teacher Questionnaire

District: _____
Name: _____ School: _____

Did you use the JASON project during the 2004-2005 school year?

_____ **no** (If you answered "no" to this question please make sure to tell your T-PRO and include reasons for not using JASON on the Phase 2: Information form)

_____ **yes** (If you answered "yes", please answer the questions below.)

How many JASON lessons did you use with your students? _____

Goals: As a result of being involved in this project, did you:

(Check all that apply.)

- _____ Increase your comfort level and use of technology in the classroom.
- _____ Increase your knowledge and understanding of science content.
- _____ Increase the amount of hands-on science done in your classroom.
- _____ Increase your interest in teaching science.
- _____ Increase the amount of field research being done by your students
- _____ Increase interdisciplinary science lessons in your classroom
- _____ Increase your understanding of the range of careers in science and technology
- _____ Increase your understanding or implementation of scientific inquiry.

Please rate the following for yourself:

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 in a multidisciplinary context is _____.

My current knowledge of the JASON project is _____.

My current comfort with scientific inquiry is _____.

My current expertise in using distance learning is _____.

My satisfaction with the project is _____.

As a result of using the JASON Project, have your students:

(Please check those that apply)

- _____ Increased skills to use technology
- _____ Increased interest in science, technology, engineering and/or mathematics careers
- _____ Increased participation in science fairs/student research/out-of-school science or technology activities

Please check all activities in which you and/or your students participated:

- | | | | |
|-------------------------------------------|-------------|----------|------------|
| _____ Video lab | _____ great | _____ OK | _____ poor |
| _____ Museum-based Camp In | _____ great | _____ OK | _____ poor |
| _____ Professional development | _____ great | _____ OK | _____ poor |
| _____ Electronic support by Blair Baldwin | _____ great | _____ OK | _____ poor |
| _____ Digital Lab | _____ great | _____ OK | _____ poor |
| _____ Web-based tools | _____ great | _____ OK | _____ poor |
| _____ Distance learning labs | _____ great | _____ OK | _____ poor |

Question for School visits: Spring 2005
Eastern Oregon – OMSI JASON Project

School: _____

Teacher: _____

1. Have you used any distance learning opportunities yet?
_____ yes _____ no

Which ones?

2. What summer programs for students are offered here?

3. What after-school programs are offered for students?

4. Who would you recommend as possible partners for JASON?

5. Is 4-H an important program for your students? _____ yes _____
no

6. What additional support from OMSI would be helpful to you?