

**MATH SCIENCE PARTNERSHIP PROGRAM
EXTERNAL EVALUATION REPORT**

Presented To

EDUCATIONAL SERVICE DISTRICT 123

Submitted By



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External Evaluation Report

Educational Service District 123 • Pasco, WA

1. INTRODUCTION

RGI Corporation is pleased to present this evaluation report for the Educational Service District 123 Math Science Partnership (MSP) Program *Southeast Washington Science Learning Community*. This report covers the period beginning with the original grant award in May 2007 until the end of June 2008. RGI Corporation is a local consulting firm contracted by the ESD 123 to conduct the external evaluation of the MSP program.

The Math Science Partnership Program was authorized through the *No Child Left Behind Act of 2001*. This Act provided for funding to be awarded through a competitive grant process to encourage institutions of higher education, local school districts, elementary schools, and secondary schools to participate in professional development activities. The goal of these activities is to increase the subject matter knowledge and instructional skills of science, mathematics, and technical education teachers with respect to student achievement in science, mathematics, reading to learn, and technical writing, particularly with under represented student populations.

The Educational Service District 123 (ESD 123), in partnership with Washington State University (WSU), Columbia Basin Community College (CBC), Laser Interferometer Gravitational-Wave Observatory (LIGO), Southeast Washington Leadership and Assistance for Science Education Reform, Pasco School District, and Othello School District submitted a proposal to the Washington State Superintendent of Public Instruction for the 2006 fiscal year competition and was awarded a 3-year grant that began in May 2007. The primary goals of the ESD 123 MSP Program are: 1) Improve the science achievement of students in grades 4 – 8 through growth in the quality of classroom instruction; 2) Sustain the project goals by building leadership capacity among the teachers and collaborative capacity between the institutions; and 3) Establish a comprehensive tracking system that documents teacher growth and student achievement resulting from the project. The program's core components consist of an annual two-week summer teacher academy/ WSU graduate course held at the LIGO facility focusing on science inquiry and knowledge of grade level content, and follow-up training for teachers throughout the year consisting of site-embedded professional development provided at each teacher's school and multiple science-based workshops.

Participating teachers were drawn from elementary schools in the Southeast Washington State School Districts of Pasco and Othello. Pasco, as part of the Tri-Cities that includes Richland and Kennewick, is located in Franklin County. It is situated on the Columbia River near the U.S. Department of Energy Hanford Site and the world-class research facility Pacific Northwest National Laboratory (PNNL). Although the Tri-Cities area has a very high concentration of individuals with Ph.D. degrees, there are a significantly higher percentage of persons living below the poverty level than the Washington State average. The most recent data from the U.S. Census Bureau reports that Pasco's percentage of persons below poverty is 23.3%, over twice that of Washington State. Over the 15-year period from 1990 to 2005, the City of Pasco's population has more than doubled from 20,337 to over 46,000 residents.

Pasco School District serves 12,660 students. As of the 2006 – 2007 school year, the student population was 69.1% Hispanic, 26.2% White, 2.7% Black, 1.4% Asian, and 0.5% American Indian. According to the Office of Superintendent of Public Instruction (OSPI), Pasco students scored significantly lower on the 5th grade Washington Assessment of Student Learning (WASL) in mathematics (35.8% passing compared to State average of 59.5%) and in reading (52.8% compared to State average of 71.9%). As of May 2007, 69.2% of Pasco SD students qualified for free or reduced-price lunch compared to the State average of 36.8%.

Othello is located in Adams County approximately fifty miles north of Pasco. It is a small community with a population of approximately 6,000 people. The percentage of Othello families living below poverty level is 18.4%, over twice that of Washington State. Othello School District serves 3,278 students. As of the 2006 – 2007 school year, the student population was 79.0% Hispanic, 19.8% White, 0.5% Black, 0.4% Asian, and 0.4% American Indian. Othello students also scored significantly lower on the 5th grade WASL in mathematics (39.1%) and in reading (52.5%). As of May 2007, 75.3% of Othello SD students qualified for free or reduced-price.

2. EVALUATION BACKGROUND AND METHODOLOGY

2.1 Evaluation Team

The local program evaluation is being conducted by the educational research firm RGI Corporation. This independent consulting corporation has extensive experience in evaluating federal and state educational projects within local and regional school districts including those funded by the U.S. Department of Education and the National Science Foundation. RGI Corporation is a Washington State Minority Business Enterprise (MBE) specializing in evaluation services for projects serving minority and under-represented populations. The evaluators are Ryan A. Landvoy, a doctoral-level mathematician with over 16 years of experience in secondary and post-secondary education, and Robert Ozuna, MPA, a Harvard educated professional with extensive evaluation experience. Both principals of RGI Corporation have broad knowledge of

scientifically-based evaluation methodologies, evaluation design and implementation, and reporting requirements of federal and state-funded programs.

2.2 Methodology

The goal of the evaluation is to measure, in both qualitative and quantitative terms, the effectiveness of this program from its inception through its current implementation. An evaluation plan was developed in coordination with the MSP planning team that centered on the measurement of the program's primary goals and objectives. The principal sources of data are participant pre- and post-surveys, summer program surveys, participant and program staff interviews, and partner surveys.

This evaluation report covers the first twelve months of the MSP program implementation. As this is the first year of the program and since the first cohort of educators has completed their professional development this past May, this evaluation report will focus primarily on program implementation objectives and the professional growth of this first group of educators. An analysis of quantitative data obtained from participant pre-and post- surveys for both the summer program and the overall program, and partner surveys will be provided. Information derived from participant interviews and other qualitative data sources is also included. Reports for subsequent program years will include a follow-up on previous cohort participants and an analysis of the impact of teacher professional development within the participating school districts.

2.3 Data Sources

Qualitative and quantitative data and information pertaining to the Math Science Partnership program was collected from several of sources. The following are the types of data obtained and the manner in which they were acquired.

- **Participant Pre-Surveys** – This survey was provided to participating teachers prior to the 2007 summer program before any MSP professional development activities had been conducted. It was designed to establish a baseline for program goals and outcome measures. It asked participants to rate their level of understanding and confidence in nature of science and inquiry-based instruction concepts, state academic standards, and content knowledge.
- **Summer Program Post-Surveys** – This survey was provided to participating teachers following the completion of the two-week summer program. It was designed to measure growth in course content areas including nature of science, inquiry-based instruction, and design and evaluation of scientific experiments. It also asked to what extent their expectations for the course were met.
- **Participant Post-Surveys** – This survey was provided to participating teachers in May 2008 following the completion of their first-year professional development activities. It was designed to measure the professional growth of this first cohort of participating teachers with respect to the program goals and objectives.

- **Participant Interviews** – These telephone interviews were conducted with most participating teachers during March of 2008. The goal of these interviews was to solicit qualitative information regarding program activities, and how these activities have impacted their classroom instruction and student learning. Suggestions on program improvements were also solicited.
- **Program Staff Interviews** – These formal and informal interviews were conducted intermittently throughout the year with program staff and stakeholders regarding the program, its successes and challenges, and its progress in meeting its goals and objectives.
- **Partner Survey** – This online survey was provided to program staff, partners, and other stakeholders regarding partnerships, collaboration beyond the scope of the MSP program, and relationships between participating organizations. Feedback on program successes, challenges, and suggestions for improvement were also solicited.

3. PROGRAM IMPLEMENTATION EVALUATION

The following section details progress made in the implementation of the MSP program over the past twelve months. It also describes the successes, challenges, and highlights of program operations. All program activities including the 2-week intensive summer program, follow-up site visits to observe participants, and professional development seminars have been implemented as described in the grant proposal.

3.1 Program Management

The project is managed by the MSP Core Planning Team (CPT) which is made up of program administrators and stakeholders from the ESD 123, LIGO, WSU Tri-cities, and the Pasco and Othello School Districts. The team met regularly – approximately every two months – to plan and schedule program activities, make operational decisions, and to assess program successes, challenges, and impacts. In addition, the team regularly communicated via e-mail, telephone, and met in sub-groups as necessary to develop educational content and conduct program business.

3.2 Participants Served

The MSP program model provides cohort-based training to teachers of grades 4 – 8 in the Pasco and Othello school districts. Teachers from the Pasco and Othello schools were recommended and/or recruited by district administrators to participate in the program. As this project required a year-long commitment, potential candidates were carefully screened to ensure that the individuals selected were able to fully meet their time and work responsibilities to the program. As the MSP program is cohort-based, one group of teachers is served each year. Over the first year of the program, there were 18 teachers served – 15 from the Pasco School District and 3 from Othello. Six of these individuals

from the first cohort have recently been identified as teacher-leaders and have agreed to serve as mentors to the year-two participants.

3.3 Summer Program

The MSP two-week intensive teaching seminar was conducted in July 2007 and served as the project’s central supporting activity. The program was held at the LIGO Hanford Observatory, a world-class research facility located Northwest of Richland, Washington. It was taught by Washington State University faculty in collaboration with MSP team members from LIGO. This seminar, also a WSU graduate course provided participants graduate credit and/or clock hours for State certification requirements. During their two weeks at LIGO, teachers completed readings on scientific inquiry and Nature of Science (NOS), participated in instructor-led and group discussions where they talked about their reactions, ideas, reflections, and questions about NOS and inquiry. They explored and developed their own inquiry-based lessons designed for their own classroom, and presented their lessons during the final two days of the course. Teachers also created their unique Instructional Improvement Plan (IIP) based upon their assessment of their own teaching strengths and weaknesses. In addition, teachers met and interacted with scientists and technicians from the LIGO facility who provided tours, opportunities for job shadowing, and access into careers and cutting-edge applications of science.

Prior to the start of the summer program, a pre-program survey was given. In this assessment, participants were asked to respond to a series of eleven statements by rating the extent to which they agreed or disagreed. These questions established a baseline not only for the shorter term goals of the summer course but the longer-term project goals as well. At the completion of the summer course, participants were asked to complete a summer program post-survey that was designed to measure growth in core MSP summer program objectives. This survey therefore only addressed six of those questions that directly pertained to objectives for the two-week course. These areas included nature of science, inquiry-based instruction, and design and evaluation of scientific experiments.

The following table gives results for these six questions. The value in the pre- and post-survey categories represents the percentage of respondents who strongly agreed or agreed with the statement. The percentage change between pre- and post-survey results is also provided.

MSP Summer Program 2007 – Pre/Post Comparison			
	Summer Pre-Survey (Strongly Agree or Agree)	Summer Post-Survey (Strongly Agree or Agree)	Change
I understand the concept of inquiry-based instruction.	85.7%	100.0%	+14.3%
I (have the skills to) apply inquiry-based instruction in my current teaching	52.4%	100.0%	+47.6%

postion.			
I understand Nature of Science concepts.	33.3%	95.3%	+62.0%
I (have the skills to) apply and/or communicate Nature of Science concepts to students in my current teaching postion.	33.3%	100.0%	+66.7%
I am confident in designing scientific experiments.	66.6%	95.2%	+28.6%
I am confident in evaluating scientific experiments.	61.9%	90.5%	+28.6%

For all statements, participants indicated an improvement in their skill level, understanding, and confidence. Particularly significant are the changes in 1) Ability to apply inquiry-based instruction (+47.6%); 2) Understanding of Nature of Science concepts (+62.0%); and 3) Ability to apply and/or communicate NOS concepts to students (+66.7%).

As part of the summer program post survey, participants were also asked to describe how their expectations for this course were or were not met. The following quotes are representational of the overall set of responses:

- “I didn’t quite know what I would be taking from this course, but I was pleasantly surprised. I feel better equipped to teach inquiry based science.”
- “My expectations were met because I gained understanding of the content, NOS and inquiry based methods. In addition, I have a plan that I can take back to my classroom that is ready to be implemented.”
- “This course went above my expectations! I not only learned about inquiry and nature of science, but it was modeled to us and we got to see it in action at the LIGO facility.”

The majority of concerns centered on the time commitment necessary for the course, the amount of reading required, and the fact that since the course was held at LIGO there was a considerable amount of commuting time necessary.

3.4 Follow-Up Activities

A number of regularly scheduled follow-up workshops were provided to program participants. In addition, program staff conducted site visits to observe the classrooms of MSP teachers. The following sections describe these activities as well as the program’s online communication tool, the “Moodle” site.

Workshops. As a follow-up to the summer program, five professional development workshops were offered to participating teachers over the academic year. These opportunities were hosted at the ESD 123 or Columbia Basin College and took place in September, November, December, February, and May of the 2007 – 2008 academic year. These three-hour workshops were structured events, each with formal agendas and stated goals that aligned closely with MSP program objectives. Each session was held in the late afternoon and typically involved presentation and discussion led by project team staff, small group discussion and presentations, hands-on activities, and dinner.

- The first follow-up workshop was held on September 27, 2007 from 4 – 7 p.m. at the ESD 123. As this was the first meeting of the cohort since the summer workshop, there was time spent with program questions and logistics, a Moodle site demonstration, and summer course reflections. Teachers then had the opportunity to discuss their Instructional Improvement Plan (IIP) as well as consider how it could be further developed or strengthened. Near the close of the meeting ideas were solicited from program teachers on possible topics for future workshops.
- The next follow-up workshop was held on November 29, 2007 at Columbia Basin College. In his workshop the concepts of energy and motion were considered through small and larger group discussion, the evaluation of science kit materials, and reflection on pedagogy.
- On December 12, 2007, Art Dolan, a member of the Powerful Teaching and Learning Group and 27-year veteran science teacher delivered professional development specifically designed for the Math Science Partnership program. His presentation utilized a coordinated approach that blended OSPI specific content, strong instructional strategies that teachers can use the following day in their own classroom together, and lesson planning tips.
- Another follow-up workshop for program teachers was held at the ESD 123 on February 28, 2008 from 4 – 7 p.m. Activities of this session included a mid-year checkup discussion, a reflection of the effectiveness of instruction relating to program teachers improvement plans, a hands-on math/ science activity, and an exploration of the concept of pH. In addition, teams constructed and posted an entry to the Moodle site.
- The final workshop for this cohort of MSP teachers was held on May 22, 2008. This session included small and large group discussions on how scientific inquiry has been implemented in participants' classrooms and an inquiry lesson on surface tension. Teachers also discussed the impact of the MSP program on their career and how they can use the knowledge they have gained to support colleagues in their own districts. Post-classroom, Views of Scientific Inquiry (VOSI), and external evaluation surveys were also administered at this workshop.

Program teachers generally had positive feedback regarding the follow-up workshops based upon survey results and participant interviews. Most felt that the workshops provided effective strategies on science content and delivery and that they came away from them with great ideas that have helped engage their students in the classroom. The teachers particularly enjoyed the presentation from Art Dolan of the Powerful Teaching and Learning Group and several indicated that they would have liked more time with him. Participants also enjoyed the opportunities to network with each other, to share best practices, and to learn what their peers were doing. A number of individuals indicated that the November workshop at Columbia Basin College may have been at “too high a level” and that it wasn’t as practical as the other events. Several participants said that having the workshops during the work week made for a very long day and suggested that holding an event on a weekend could be helpful.

Teaching Observations. Program staff also visited the classrooms of program teachers to observe, mentor, and help reinforce and build upon the experiences from the summer course. A primary objective of these visits was to help participants improve their own ideas about inquiry science, the nature of science, and specific science activities and content. MSP program staff including representatives from Washington State University and Columbia Basin College, and LIGO visited each classroom twice during the academic year and provided detailed feedback on science content and inquiry. The first classroom observations were conducted in December 2007 and early January 2008 while the second follow-up visits were made later in the Spring. Program staff observed lessons prepared by MSP teachers based upon their Instructional Improvement Plan. The first lesson was critiqued primarily on science content while the second observation focused upon how rigorously teachers were implementing scientific inquiry. Discussions with participants followed the observations where in many cases content-based guidance on LASER kits was provided.

“Eighteen teachers have a better understanding of teaching inquiry – especially when working with their LASER Kits. That means over 500 kids have been impacted.”

MSP Program Staff

Moodle Site. To enhance collaboration between program participants and project staff, the ESD 123 hosted a “Moodle Site” – a web-based application that is designed as a vehicle for online collaboration, dialogue, feedback, and sharing of resources and information. The site also provides feedback and on-going communication/information to school administrators, teachers, and other interested educators on the progress of the project. Each participant in the community creates a username and password that allows them access to post information, observe activity schedules, contribute to threaded discussions, and view content posted by project administrators and fellow participants.

Although the Moodle site was demonstrated and utilized in several of the follow-up meetings, the tool was not used to its fullest potential as a mechanism for participants to share and discuss program content, and regularly communicate throughout the academic

year. Most program teachers described in interviews how they were often extremely busy with their teaching duties and had very limited time to visit and/or contribute to the site. However, many program stakeholders and participants believe that the Moodle site has significant potential although a different format and set of incentives may be necessary.

4. OUTCOMES EVALUATION

As described above, the goals of the ESD 123 MSP Program are to: 1) Improve the science achievement of students in grades 4 – 8 through growth in the quality of classroom instruction; 2) Sustain the project goals by building leadership capacity among the teachers and collaborative capacity between the institutions; and 3) Establish a comprehensive tracking system that documents teacher growth and student achievement resulting from the project.

The primary data sources utilized in the outcomes evaluation that follows are participant pre- and post- program surveys, participant interviews, and the partner survey. All survey instruments can be found in the appendices.

4.1 Growth in the Quality of Classroom Instruction

As described previously, prior to the start of the summer workshop in July 2007 participants completed a pre-program survey that assessed their level of understanding and confidence in nature of science and inquiry-based instruction concepts, State academic standards, and content knowledge. At the final meeting for the first cohort in May 2008, teachers completed a post-survey which again asked them to rate the same series of statements from the pre-survey.

The following table gives results for these eleven questions. The value in the pre- and post-survey categories represents the percentage of respondents who strongly agreed or agreed with the statement. The percentage change between pre- and post-survey results is also provided. Note that the first six of the questions were evaluated as part of the summer program assessment where the interval between pre- and post-surveys was two weeks. In the following case, the period between pre- and post-surveys was approximately 11 months so as to capture teacher growth over the entire year of the program.

MSP Program: Cohort 1 – Pre/Post Comparison			
	Program Pre-Survey (Strongly Agree or Agree)	Program Post-Survey (Strongly Agree or Agree)	Change
I understand the concept of inquiry-based instruction.	85.7%	100.0%	+14.3%

I apply inquiry-based instruction in my current teaching position.	52.4%	100.0%	+47.6%
I understand Nature of Science concepts.	33.3%	92.9%	+59.6%
I apply and/or communicate Nature of Science concepts to students in my current teaching position.	33.3%	85.7%	+52.4%
I am confident in designing scientific experiments.	66.6%	92.9%	+26.3%
I am confident in evaluating scientific experiments.	61.9%	71.4%	+9.5%
I have strong mathematics content knowledge for my current teaching position.	66.7%	100.0%	+33.3%
I have strong science content knowledge for my current teaching position.	52.4%	85.7%	+33.3%
I have a good understanding of the Washington State EALRs and GLEs for the subjects I teach.	76.2%	85.7%	+9.5%
I connect the Washington State EALRs and GLEs to the content I teach.	85.0%	92.9%	+7.9%
I effectively connect mathematics and science concepts for my students.	40.0%	85.7%	+45.7%

For all statements, participants indicated an improvement in their skill level, understanding, and confidence. There was strong improvement in the level to which participants understood and were able to apply both inquiry-based and Nature of Science concepts in their classroom. Teachers who were able to apply inquiry based instruction in their classroom increased from 52.4% to 100% of the cohort. In addition, teachers who were able to apply and/or communicate Nature of Science concepts in their current teaching position jumped from 33.3% to 85.7% - an increase of 52.4% - over the duration of the program.

Teacher confidence in designing scientific experiments also increased significantly (+26.3%). Confidence in evaluating experiments, however, saw a more modest improvement (+9.5%). Participants also expressed increased science and mathematics content knowledge over the program year. In both subjects, the percentage of individuals who reported that they “had strong content knowledge for my current teaching position” increased by 33.3%.

In addition, there were moderate increases in teachers who reported that they 1) had a good understanding of Washington State EALRs and GLEs and 2) connected them to their content area. For both questions, pre-survey results were very high (76.2% and 85.0%, respectively) so the small gains (9.5% and 7.9%, respectively) could be considered important.

The increase in participants who felt that they effectively connected mathematics and science concepts in the classroom is very significant. Only 40% of teachers reported in the pre-survey that they effectively connected the two areas for their students. Following the completion of the MSP program, this increased to 85.7% for a net increase of 45.7%.

Participant interviews. During March 2008 participant interviews were conducted to gather qualitative data regarding program activities, and how these activities have impacted their classroom instruction and student learning.

When teachers were asked *to what extent their participation in the MSP program impacted classroom instruction*, all indicated that the program has had a moderate to significant effect on their teaching practices. Many said that they are now utilizing inquiry-based instructional methods and that their approach to teaching science has been positively impacted. Participants have also said that they are more intentional as they develop lessons, that they now are able to use a variety of approaches to their lessons instead of relying solely upon the textbook. Teachers have also stated that “everything is now viewed through science inquiry eyes” and that their instruction techniques are very different – and much better – than without the MSP program.

“The tools we have learned have greatly enhanced my instructional abilities.”

MSP Teacher

MSP Teachers were also asked *how their participation in the MSP program impacted understanding of the science EALR and GLEs*. A majority of teachers felt that the program significantly helped their understanding and ability to integrate the Washington State Essential Academic Learning Requirements (EALRs) and the Grade Level Expectations (GLEs) into their science instruction. Many reported that they had increased confidence, particularly in the higher level experimental and inquiry-based sections. Several individuals interviewed felt that it could be helpful that additional time be spent on EALRs and GLEs in the follow-up workshops.

“My students are more motivated to learn as I utilize these new inquiry-based methods.”

MSP Teacher

All teachers interviewed responded very positively when asked *how their participation in the MSP program impacted their students*. They felt that their students are significantly more engaged in the science classroom, have become more actively involved in their own learning, and are able to approach scientific processes more independently. Many teachers believe that their

students are more motivated and excited about the learning process as the approach to science and scientific inquiry makes their experience more genuine.

4.2 Leadership and Collaborative Capacity

The second program goal involved the building of leadership capacity among the teachers and collaborative capacity between the institutions. In terms of building teacher leadership, six of the eighteen individuals – one third of the participants – from the first cohort have been identified as teacher-leaders and have agreed to serve as mentors to the year-two participants. In this role, these leaders will provide expertise to second year MSP teachers as well as other teachers in their respective districts on inquiry-based instructional methods, science content, and best practices. It is expected that in years two and three of the program as closer partnerships are formed and additional evaluation instruments relating to this goal are implemented, the longer-term impacts of teacher leadership will emerge.

To gauge the quality of collaboration and relationships between MSP program partners, an online survey was administered to program partners and other stakeholders in June 2008. The following table gives the results of each question of the partnership survey broken down by response percentage.

MSP Program Partnership Survey Results						
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know
The MSP program has provided high-quality professional development opportunities for participating teachers.	77.8%	22.2%	0.0%	0.0%	0.0%	0.0%
The MSP program has established a broad range of educational and scientific partnerships.	66.7%	33.3%	0.0%	0.0%	0.0%	0.0%
Over the past year, my district/school/organization has participated in collaborative science education projects with other project partners outside of the scope of the MSP program.	55.6%	22.2%	0.0%	0.0%	0.0%	22.2%
Strong relationships have formed between my district/school/organization and other participating MSP organizations.	22.2%	66.7%	0.0%	11.1%	0.0%	0.0%
Overall, this past year's Math Science Partnership program has been very successful.	55.6%	44.4%	0.0%	0.0%	0.0%	0.0%

All respondents felt that this past year’s program had been successful and had provided high-quality professional development opportunities to program teachers. The goal of the third question above was assess the extent to which additional collaboration was conducted beyond the scope of the MSP program. This is particularly important as a measure of how the MSP program helps facilitate additional educational partnerships. Except for two individuals that did not know the status of these additional collaborative endeavors, all respondents either strongly agreed or agreed that the MSP program helped further science education partnerships within the participating school districts.

**“The quality of our partners
is outstanding.”**

MSP Program Staff

4.3 Tracking System

The third program goal involves the establishment of a comprehensive tracking system that documents teacher growth and student achievement resulting from the project. This system is to maintain a database of MSP program participants, the grade levels they teach and their teaching credentials, their students including demographics, and academic indicators including student WASL scores and grades. This tracking system is currently under development. A highly qualified MSP program research assistant has recently been hired to lead the design, development and implement the system.

5. ACHIEVEMENTS AND RECOMMENDATIONS

Overall, the Math Science Partnership program has had a successful first year. The following are the major first year achievements of the MSP program:

- All first year MSP program components were successfully implemented. This includes the summer program, five follow-up workshops, and two classroom observations for each participant.
- There were 18 teachers served – 15 from the Pasco School District and 3 from Othello. Six of these individuals from the first cohort have recently been identified as teacher-leaders and have agreed to serve as mentors to the year-two participants.
- One hundred percent (100%) of teachers completing the summer program reported that they are able to apply inquiry-based instruction in their current teaching position – an increase of 47.6% over the program pre-survey.
- Over ninety-five percent (95%) of teachers completing the summer program reported that they understood Nature of Science concepts – an increase of 62.0% over the program pre-survey.

- One hundred percent (100%) of teachers completing the summer program reported that they had the abilities to apply inquiry-based instruction in their current teaching position – an increase of 66.7% over the program pre-survey.
- Most participating teachers felt that the MSP program significantly helped their understanding and ability to integrate the Washington State Essential Academic Learning Requirements (EALRs) and the Grade Level Expectations (GLEs) into their science instruction.
- A majority of participating teachers indicated that the program has significantly impacted their teaching practices and that their students are more engaged in the science classroom, have become more actively involved in their own learning, and are able to approach scientific processes more independently.
- Over eighty-five percent (85%) of teachers completing the MSP program reported that they effectively connect mathematics and science concepts in their classroom – an increase of 45.7% over the program pre-survey.
- One hundred percent (100%) of teachers completing the MSP program reported that they effectively connect mathematics and science concepts in their classroom – an increase of 45.7% over the program pre-survey.
- MSP teachers reporting that they had strong content knowledge in science increased by 33% over the program pre-survey.
- All program partners felt that the first year program has been very successful, has provided high-quality professional development opportunities to program teachers, and has established a broad range of educational and scientific partnerships.

As with all new programs, there have been ongoing adjustments needed and some project components have been executed at a slower pace than originally proposed. The following recommendations are based upon observations made and conclusions drawn during the twelve month evaluation period.

- **Moodle site.** Based upon interview and survey feedback from MSP staff and participants, the Moodle online collaboration website is not being utilized to its fullest potential. An analysis of how the tool is currently used as well as a survey of stakeholders should be conducted to determine how to adapt the present model to best serve program participants.
- **Continue to strengthen follow-up workshops.** Based upon staff and participant survey data and interviews, the follow-up workshops were valuable but sometimes lacked the quality and focus of the summer program. Efforts should

be made to build upon the successes of the year one workshops and strengthen the content, delivery, and interactions between participants at these meetings.

- **Tracking system.** Although it is still early in the program, the development of comprehensive system for documenting MSP teacher growth and student academic progress as described in goal three should be initiated. This will limit the amount of retroactive data collection required on participating teachers and students of prior cohorts and allow for the analysis of this data to be conducted earlier.

The ESD 123 Math Science Partnership program has had a successful first year in terms of both its implementation and the achievement of its goals. It has implemented all of its program components, and has been particularly successful in achieving key program objectives relating to teacher understanding and confidence in applying inquiry-based instruction, nature of science concepts, and connecting science and mathematics within the classroom. The MSP program, as it enters its second program year has a solid foundation in which to build upon these successes to further impact Washington State teachers and the students they serve.



Instructions – Please select one response for each of the statements below. Thank you.

MSP Program Pre-Survey					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I understand the concept of inquiry-based instruction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I apply inquiry-based instruction in my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I understand Nature of Science concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I apply and/or communicate Nature of Science concepts to students in my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am confident in designing scientific experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am confident in evaluating scientific experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I have strong mathematics content knowledge for my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I have strong science content knowledge for my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I have a good understanding of the Washington State EALRs and GLEs for the subjects I teach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I connect the Washington State EALRs and GLEs to the content I teach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I effectively connect mathematics and science concepts in my classroom.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. What are your expectations for this program?					

What is the month of your birthday? _____
 What is the date of your birthday? _____
 What is the number of your house or PO box? _____



Instructions – Please select one response for each of the statements below. Thank you.

MSP – Summer Program Post-Survey					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I understand the concept of inquiry-based instruction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have the skills to apply inquiry-based instruction in my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I understand Nature of Science concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I have the skills to apply and/or communicate Nature of Science concepts to students in my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am confident in designing scientific experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am confident in evaluating scientific experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Describe how your expectations for this course were or were not met.					

What is the month of your birthday? _____
 What is the date of your birthday? _____
 What is the number of your house or P0 box? _____



Instructions – Please select one response for each of the statements below. Thank you.

MSP – Year-End Teacher Survey					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I understand the concept of inquiry-based instruction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I apply inquiry-based instruction in my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I understand Nature of Science concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I apply and/or communicate Nature of Science concepts to students in my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am confident in designing scientific experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am confident in evaluating scientific experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I have strong mathematics content knowledge for my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I have strong science content knowledge for my current teaching position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I have a good understanding of the Washington State EALRs and GLEs for the subjects I teach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I connect the Washington State EALRs and GLEs to the content I teach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I effectively connect mathematics and science concepts for my students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

-Please continue on the other side-



<p>12. What aspects of the MSP Program did you like the most?</p>	
<p>13. What aspects of the MSP Program did you like the least?</p>	
<p>14. What suggestions would you make to improve the program?</p>	

What is the month of your birthday? _____
What is the date of your birthday? _____
What is the number of your house or P0 box? _____

MATH SCIENCE PARTNERSHIP

Partner Survey

INSTRUCTIONS: As part of the evaluation for the Math Science Partnership (MSP) program, we would appreciate your feedback in the following survey. You are asked for your e-mail address only to ensure the completeness of the survey - no individual responses will be reported.

Please select one response for each of the following statements.

The MSP program has provided high-quality professional development opportunities for participating teachers.

Strongly Agree Agree Neutral Disagree Strongly Disagree
Don't Know

The MSP program has established a broad range of educational and scientific partnerships.

Strongly Agree Agree Neutral Disagree Strongly Disagree
Don't Know

Over the past year, my district/school/organization has participated in collaborative science education projects with other project partners outside of the scope of the MSP program.

Strongly Agree Agree Neutral Disagree Strongly Disagree
Don't Know

Strong relationships have formed between my district/school/organization and other participating MSP organizations.

Strongly Agree Agree Neutral Disagree Strongly Disagree
Don't Know

Overall, this past year's Math Science Partnership program has been very successful.

Strongly Agree Agree Neutral Disagree Strongly Disagree
Don't Know

What have been the MSP program's primary successes this first project year?

What have been the MSP program's primary challenges this first project year?

Do you have any comments or suggestions for program improvements?

Email: