

Science Partnership Academy 2010–11 Survey Results

This reports summarizes the results of the pre- and post surveys administered to the participants of the Science Partnership Academy in October 2010 and April 2011.

Background

1. Which of the following best describes the position that you currently hold with respect to the regional team that you represent at this Science Partnership Academy? (n=49)
 - 27% Regional Alliance Director
 - 2% Other Regional Alliance staff
 - 22% ESD Science Coordinator
 - 4% District Administrator or Superintendent
 - 6% School Principal or Administrator
 - 12% Science Coach or TOSA
 - 29% Professional Development Provider
 - 20% Teacher
 - 4% College or University Faculty
 - 20% Other
2. Which of the following best describes the region of the state that your team serves? (n=42)
 - 41% Western Washington
 - 12% Seattle-Tacoma Metropolitan Area
 - 24% Central Washington
 - 24% Eastern Washington
 - 2% N/A
3. What is the highest degree that you hold? (n=42)
 - 12% BA or BA
 - 67% MA or MS
 - 7% Multiple MA or MS
 - 14% PhD or EdD
4. Do you have a degree (major) in a science discipline? (n=42)
 - 62% Yes
 - 38% No — *If No, skip to item number 7.*
5. In what science discipline? (n=26)
 - 62% Biology or other Life Science
 - 4% Physics
 - 8% Chemistry
 - 8% Earth science
 - 0% Astronomy or other space science
 - 37% Other
6. Have you ever taught science content at any level? (n=52)
 - 75% Yes
 - 25% No — *If No, skip to item number 11.*
7. At what level did you teach or are you teaching Science? (n=39)
 - 41% Elementary
 - 59% Middle School
 - 49% High School
 - 13% Community College
 - 21% 4-year College or University
 - 10% Graduate level
8. How many years did you teach science content at any level? (n=39)
 - 5% 2 or less years
 - 5% 3 to 5 years
 - 39% 6 to 10 years
 - 10% 11 to 15 years
 - 21% 16 to 20 years
 - 21% 21 to more years
9. When was the last time you taught science? (n=38)
 - 29% I am teaching science this year (2010–2011 school year)
 - 0% I taught Science last year (2009–2010 school year)
 - 37% I taught Science 2 to 5 years ago
 - 16% I taught Science 6 to 10 years ago
 - 8% I taught Science 11 to 15 years ago
 - 8% I taught Science 16 to 20 years ago
 - 3% I taught Science more that 20 years ago
10. Have you ever taught science education for either preservice or inservice science teachers?
 - 56% Yes
 - 44% No — *If No, skip to item number 13.*
11. How many years have you taught science education? (n=29)
 - 28% 2 or less years
 - 38% 3 to 5 years
 - 14% 6 to 10 years
 - 10% 11 to 15 years
 - 7% 16 to 20 years
 - 3% 21 to more years

The Research Behind the Washington State Science Logic Model

The data shown in the table below represents the results from only those who responded to both the pre- and the postsurvey. Although there was a general increase from the pre- to the postsurvey, the resource titled *Designing professional development for teachers of science and mathematics* was the only one where the increase was significant.

To what extent are the following resources impacted utilized in your work in developing PD providers?

| | n | Mean Pre | Mean Post | Change |
|--|----|----------|-----------|------------|
| 12. American Association for the Advancement of Science (1991). <i>Science for all Americans</i> . Washington D.C.: AAAS. | 18 | 3.11 | 3.39 | .28 |
| 13. Banilower, E., Cohen, K., Pasley, J., & Weiss, I. (2008). <i>Effective science instruction: What does research tell us?</i> Portsmouth, NH: RMC Research Corporation, Center on Instruction. | 17 | 3.88 | 4.05 | .18 |
| 14. Garmston, R. J. & Wellman, B. M. (2009). <i>The adaptive school: A sourcebook for developing collaborative groups, 2nd Edition</i> . Norwood, MA: Christopher-Gordon. | 17 | 3.53 | 3.65 | .12 |
| 15. Loucks-Horsley, S., Love, N., Stiles, K. E., Mundry, S., & Hewson, P. W. (2010). <i>Designing professional development for teachers of science and mathematics, Third edition</i> . Thousand Oaks, CA: Corwin. | 17 | 3.41 | 3.94 | .53 |
| 16. Michaels, S., Shouse, A., & Schweingruber, H. (2008). <i>Ready, Set, Science: Putting research to work in K-8 science classrooms</i> . Washington D.C: National Academies Press. | 18 | 3.67 | 3.83 | .17 |
| 17. National Research Council. Bransford, J.D., Brown, A.L., & Cocking, R.R. (Eds.). (2003). <i>How People Learn: Brain, Mind, Experience, and School</i> . Washington, DC: National Academy Press. | 18 | 4.44 | 4.67 | .22 |

NOTE: Bold type indicates that the change is significant at the 0.07 level.

Understanding the Washington State Science Logic Model

How able do you feel you are to recognize when a lesson has effectively accomplished each of the following elements? Do you know specifically what you would look for among students? Use the Scale below to rate your ability level with each element.

The table below show the total number of participants who responded to the item (n), the percentage of those who reported on the post survey that they are very able to recognize the element, and the mean scores for the pre- and postsurvey. The means scores include only those who responded to the items on both the pre- and the postsurvey.

There was a general increase in all areas from the pre- to the postsurvey, however the increase was significant for items 22 (sense-making) and item 24 (metacognition).

| Elements of Effective Science Learning Experiences for Students | n | Percent Very Able at Post | Mean Pre | Mean Post | Change |
|---|----|---------------------------|----------|-----------|-----------------------------|
| 18. Reveal preconceptions and their initial reasoning | 42 | 75% | 4.50 | 4.68 | .18 |
| 19. Are intellectually engaged and motivated | 32 | 53% | 4.14 | 4.36 | .23 |
| 20. Use evidence to generate explanations | 31 | 65% | 4.38 | 4.57 | .19 |
| 21. Communicate and critique their scientific ideas and the ideas of others | 31 | 58% | 4.24 | 4.48 | .24 |
| 22. Make sense of the learning experience and draws appropriate understanding | 31 | 48% | 3.95 | 4.43 | .48 p=.014 |
| 23. Make connections between new and existing scientific concepts by understanding and organizing facts and information in new ways | 32 | 38% | 3.91 | 4.27 | .36 |
| 24. Reflect on how personal understanding has changed over time and recognize cognitive processes that lead to changes | 32 | 34% | 3.73 | 4.09 | .36 p=.017 |

NOTE: Bold type indicates that the change is significant at the 0.07 level.

Capacity to Support Professional Development

Indicate the degree to which you agree with each of the following statements about the regional team that you represent.

The table below show the total number of participants who responded to the item (n), the percentage of those who agreed or strongly agreed with the statement on the postsurvey, and the mean scores for the pre- and postsurvey. The means scores include only those who responded to the items on both the pre- and the postsurvey (n=22).

The participants who attended both of the Academies reported an increase in their organization's capacity to support professional development. However, the increase was significant for items 29, 33, 34, and 37.

| | n | Agree or Strongly Agree | Mean Pre | Mean Post | Change |
|---|----|-------------------------|----------|-----------|-----------------------------|
| 25. Our regional team has a shared vision of effective science teaching and learning practices. | 32 | 100% | 3.36 | 3.59 | .23 |
| 26. Our regional team has a shared vision of effective professional development for science teachers. | 31 | 100% | 3.24 | 3.43 | .19 |
| 27. Our regional team has a shared vision of the kind of policies and practices schools and districts should have in place in order to support inquiry-based science instruction. | 31 | 90% | 3.10 | 3.15 | .05 |
| 28. Our regional team has proactively worked with school and district administration to help them implement policies and practices that support inquiry-based science instruction. | 31 | 84% | 2.90 | 3.10 | .19 |
| 29. Our regional team has a shared vision of a process for implementing effective school-based professional development that will help teachers use research-based instructional practices, materials, and assessments to engage students in the Effective Science Learning Experiences (see items 18 to 24). | 31 | 90% | 2.75 | 3.15 | .40 <i>p=.017</i> |
| 30. Our regional team has encouraged schools and districts to develop and implement policies and practices that support school-based professional development (some form of PLC) for science. | 29 | 82% | 2.83 | 3.00 | .17 |
| 31. Our regional team has a mechanism to help district build the capacity necessary to support school-base professional development for science. | 29 | 76% | 2.55 | 2.85 | .30 |
| 32. Our regional team has establish clear criteria for identifying instructional leadership that is based on the person's demonstrated ability to implement Effective Science Learning Experiences with students and ability to positively influence the instructional practices of science teacher. | 27 | 63% | 2.14 | 2.53 | .21 |
| 33. Our regional team has helped school and district administration identify instructional leadership based on this criteria (see item 47). | 26 | 69% | 2.16 | 2.63 | .47 <i>p=.003</i> |
| 34. Our regional team has a mechanism to develop and nurture those who have the potential to become instructional leaders but do not yet meet the established criteria. | 27 | 89% | 2.56 | 2.94 | .39 <i>p=.030</i> |

| | n | Agree or Strongly Agree | Mean Pre | Mean Post | Change |
|---|----|-------------------------|----------|-----------|-----------------------------|
| 35. Our regional team has a mechanism for developing a cadre of trainers capable of providing foundational professional development on the modules. | 31 | 84% | 2.82 | 2.86 | .05 |
| 36. Our regional team has a mechanism for developing a cadre of trainers capable of providing developing expertise professional development on the modules. | 29 | 72% | 2.60 | 2.70 | .10 |
| 37. Our team has a means of assessing and analyzing the unique context and issues within our region. | 30 | 87% | 2.43 | 3.00 | .57 p=.004 |
| 38. Our team has a plan to promote and build support for science education and to raise the priority of science education among stakeholders. | 32 | 91% | 2.91 | 3.18 | |

NOTE: Bold type indicates that the change is significant at the 0.05 level.

Professional Development

The tables below show the total number of participants who responded to the item (n), the percentage of those who reported on the postsurvey that the professional development provided by their organization always and consistently addresses the item, and the mean scores for the pre- and postsurvey. The means scores include only those who responded to the items on both the pre- and the postsurvey (n=21).

| Knowledge and Skill | n | Always and Consistently Addressed | Mean Pre | Mean Post | Change |
|---|----|-----------------------------------|----------|-----------|------------|
| Answer the following by indicating how well you feel the FOUNDATIONAL PROFESSIONAL DEVELOPMENT currently available in your region helps teachers in each of the following areas? | | | | | |
| 39. Provides teachers with a beginning understanding of the Elements of Effective Science Learning Experiences for Students (see items 18 to 24 above) | 30 | 20% | 2.71 | 2.76 | .05 |
| 40. Helps teachers understand how the science standards relate specifically to the module | 30 | 30% | 2.86 | 3.10 | .24 |
| 41. Helps prepare teachers to effectively use the curriculum materials to provide effective science learning experiences (curricular reasoning) | 30 | 47% | 3.19 | 3.33 | .14 |
| 42. Begins to help teachers develop content specific pedagogical skills | 29 | 24% | 2.75 | 3.00 | .25 |
| 43. Helps teachers begin to think about and possibly implement formative assessment practices that effectively inform instruction | 30 | 27% | 2.38 | 2.86 | .48 |
| 44. Helps teachers begin to think about and possibly implement summative assessment and use summative assessment data to improve instruction | 30 | 10% | 2.25 | 2.30 | .05 |

NOTE: n=21. Bold type indicates that the change is significant at the 0.07 level.

The participants who attended both of the Academies reported an increase in all but one item, however the increase was significant for items 43, 46, 50, and 51.

| Knowledge and Skill | n | Always and Consistently Addressed | Mean Pre | Mean Post | Change |
|---|----------|--|-----------------|------------------|-----------------------------|
| Answer the following by indicating how well you feel the DEVELOPING EXPERTISE PROFESSIONAL DEVELOPMENT currently available in your region helps teachers in each of the following areas? | | | | | |
| 45. Provides teachers with an in-depth understanding of the Elements of Effective Science Learning Experiences for Students (see items 18 to 24 above) | 30 | 17% | 2.74 | 2.84 | .11 |
| 46. Prepares teachers to engaged students in effective learning experiences (see items 18 to 24 above). | 30 | 30% | 2.63 | 3.16 | .53 p=.004 |
| 47. Develops a deep science content knowledge relevant to the module | 30 | 27% | 2.67 | 2.95 | .29 |
| 48. Helps teachers understand the Science Learning Standards and how they influence curriculum and relate specifically to the module | 30 | 27% | 2.81 | 3.14 | .33 |
| 49. Prepares teachers to effectively use the curriculum materials to provide effective science learning experiences (curricular reasoning) | 30 | 27% | 2.95 | 3.05 | .10 |
| 50. Helps teachers develop content specific pedagogical skills | 31 | 29% | 2.64 | 3.18 | .55 p=.019 |
| 51. Helps teacher implement formative assessment practices that effectively informs instruction | 30 | 33% | 2.86 | 3.29 | .43 p=.025 |
| 52. Helps teachers implement summative assessment and use summative assessment data to improve instruction | 30 | 3% | 2.33 | 2.33 | 0 |

Evaluation

Participation in the April 2011

| Academy . . . | n | Strongly Disagree | Disagree | Agree | Strongly Agree |
|--|----|-------------------|----------|-------|----------------|
| 53. Helped me understand the value and importance of evaluation | 32 | 0% | 3% | 38% | 59% |
| 54. Helped me understand how the Logic Model can guide the evaluation of our professional development | 32 | 0% | 0% | 31% | 69% |
| 55. Helped me understand the importance of aligning implementation with the conceptual framework of the logic model and the evaluation | 32 | 0% | 3% | 41% | 56% |
| 56. Helped our team plan evaluation activities | 32 | 0% | 0% | 25% | 75% |
| 57. Provided examples and instruments that our team will use in the evaluation of our work | 30 | 0% | 0% | 30% | 70% |
| 58. Helped me understand the EESI tools and how they can be used in our evaluation | 32 | 3% | 9% | 34% | 53% |
| 59. Helped me understand how to develop and recognize a comprehensive and well-designed evaluation plan | 32 | 3% | 6% | 47% | 44% |

Other Comments

Please provide any comments regarding your expectations for the Science Partnership Academy that you would like the organizers to know.

Responses from the Presurvey in October 2010.

- How are we going to keep this machine running in these dire economic time.
- Bringing small districts to the action and awareness level of larger one.
- Team time and opportunity to network with other regions would be appreciated.
- Time for regional planning is always rare and precious. When possible error on the side of "more time" for regional planning and early in the session: "the placement of team time at the end of the day to me sends the wrong message"
- Continue to need concrete examples and expectations
- We are a large area, small districts that need outreach. We are also very new.
- Bring us together as leaders in science ed. Work together to develop a plan to promote and build support for science ed. Help raise the priority for science ed.
- The level of consistency is so varried in our region - alliance does not provide support foundational PD proficers for region. Have to score low.

Responses from the Postsurvey in April 2011.

- This academy has provided me with outstanding PD that aligns closely with my job. Thank you for this outstanding PD experience. Kudos to you on a job well done!

- The EESI seemed like an instructional addition separate from other stuff. The EESI overview session was too much information on day 1 for me. It seemed like it complicated our target.
- SPA has been one of the most beneficial experiences I've participated in. The new learnings are always relevant and purposeful. Coming to SPA is like going to the Dr. to get a "booster" shot. I leave with a little pain (headache)/brain drain) but as processing takes place I'm all "jazzed up" and ready to tackle the hard work coming my way.
- My responses were tied to K-8 Foundational PD and our 15 hours of Science Leadership Network (that focused on Developing Expertise PD) for K-12 teachers and administrators.
- I already had significant evaluation and research design experience! I am the least familiar of our team with what happens on a daily basis at the ESD and in PD.
- I don't understand how/why EESI was put into the program. Is it an addition to the Logic Model, completely different, or to be used in conjunction?
- Thanks for the exceptional quality.
- I'm just starting to get it. Would like to now see us focus our work on using the Logic Model as the lens for our PD, assessment, evaluation, discussion, and everything. How can we use this as a state wide model, including OSPI as a part of this work?
- It was good to have plenty of time for team planning for relevant evaluation. This was a very valuable time for us!
- I hope we can find a way to continue this venture. Thank you!
- Level 1 concern: Room temp, the airport noise at night. How can we keep this going next year?
- A great opportunity to develop and equip a new leadership team in our region.
- Great planning and facilitation.
- I'm still new to my team and not comfortable answering most of these questions.