

**Port Angeles School District**  
**Science Curriculum Committee 2008-09 Report**  
***District-Wide Science Program Recommendations for 2009-10***  
**July 13, 2009**

**EXECUTIVE SUMMARY**

The Port Angeles School District Science Curriculum Committee continued its work during the 2008-09 academic year. In the past, science leaders spent two weeks each in the summers focusing on a professional development topic that they then converted to their practice in the district. This work has enriched the teacher leadership and coaching concepts that the district continues to nurture. Many of these teacher leaders still provide leadership in assessment and instructional strategies with new staff and those new to a grade level.

During the past years at grades K-6, the fourth of four strands were addressed with the most recent implementation. In 2004-05, both the physical science and the scientific reasoning strands were addressed. During the 2005-06 academic year, the life science strand was rolled out. During the 2006-07 year, the earth science strand was introduced as elementary teachers completed the comprehensive science kit curriculum implementation. Vocabulary has been assigned to the requisite grade level so that teachers, students and parents have explicit expectations with regard to the K-6 science curriculum map. The vocabulary has been reviewed and will need to be revisited with the new science standards.

After significant consultation with district teaching staff, the committee recommended reducing the number of science kits required at grades three and four for the 2006-07 year and beyond. At third grade, the committee removed the *Measurement Module* from the science instructional calendar. The committee determined the concepts within this kit are taught in math, and the metric content must be integrated into math. At fourth grade, the committee recommended removing the *Ideas and Inventions* kit from the science instructional calendar. The committee determined the concepts in this kit can be addressed in other ways; this was thought not to be a robust kit with regard to the state Grade Level Expectations. This thinking is still sound with the advent of the new state standards.

The committee continues to believe teachers will be more successful if they “cover” fewer kits at these grade levels, allowing more in-depth instruction on those kits being taught. Research into other districts’ practices yielded the conclusion that many districts had already cut back kits at grades K-6. Student achievement has continued to improve with this plan of action.

Another significant K-6 refinement is the review and revision of science kit assessments. The revised assessments reflect a more state-aligned approach to internal assessments. The grade level teams, led by the science building leaders, reviewed each kit assessment and made recommendations to make science assessments coherent across the entire district. This is necessary to provide equitable opportunities for science instruction at all schools. It also enables teachers to collaborate across an entire grade level using common concepts that inform all classroom practice as coordinated, consistent classroom-based assessments are implemented.

At the middle level, the curriculum articulation and alignment plan was continued. The North Cascades and Olympic Science Partnership (NCOSP) grant enabled the district to realize significant cost savings in introducing middle level science curriculum. Significant study and alignment work has also been done to identify those gaps in content alignment requiring supplemental materials and instruction. Vocabulary has been assigned to appropriate and unique grade levels so that teachers, students and parents have explicit expectations for terms necessary to master standards at each grade level. These standards have been reviewed and assessments refined.

At Port Angeles High School, the science department continued to research best instructional practices and work with curriculum materials that align with our state's science expectations. Benchmark science assessments have been drafted and piloted across the ninth grade science classes during both 2005-06 and subsequent academic years. Inquiry-based science materials have been utilized as a cornerstone for the ninth grade science curriculum. The committee recommended a companion integrated inquiry approach to be studied for the tenth grade science course. This did occur during the 2006-07 school year. Collaboration time has been devoted to this curriculum over the past two years. The two year integrated science courses are in their third year of implementation at the high school. Student achievement gains are being seen as a result of the hard work at the high school level and those grade spans that support the high school.

It is important to note that the class of 2010 will be the first class required to pass the science WASL for graduation. While the 2007 Legislature postponed the science graduation requirement, it remains an NCLB mandate and will be part of the Adequate Yearly Progress (AYP) calculation shortly. The State Board of Education is still researching the possibility of an end of course biology exam to replace the current grade 10 science WASL. This model would mirror the approach taken with the math WASL.

Appendix to this report is:

Appendix A, Science Notebook Expectations

**SCIENCE CURRICULUM COMMITTEE MEMBERSHIP**

Staff members listed below comprise the Science Curriculum Committee membership for the 2008-09 school year. They represent every school in the district, having begun their work several years ago. The committee plans to continue its work by collaborating regularly during 2009-10.

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|---------------------------|---------------------|
| 1. Sandi Biasell          | 9. Teresa Haller    |
| 2. Alex Carlson           | 10. Dan Lieberman   |
| 3. Coco Carlson           | 11. Brenda Manson   |
| 4. Susan Dekreon          | 12. Lisa Lisk       |
| 5. Jennifer Duncan-Taylor | 13. Michelle Reid   |
| 6. Cheryl Gerardi         | 14. Kelly Sanders   |
| 7. John Gallagher         | 15. Mark Schmidt    |
| 8. Joe Glatz              | 16. Gunnar Thomason |

**BACKGROUND**

The district Science Curriculum Committee has been meeting since the fall of 2003. With the partnership and collaborative grant support of Washington LASER, the OESD and the NCOSP, significant progress has been made in the alignment and implementation of science curriculum and instruction in Port Angeles.

Building science leaders have remained constant and the Science Curriculum Committee membership has been sustained.

Prior to 2004-05, planning occurred to implement the K-5 FOSS Science Kits across the four content strands determined by the curriculum committee, i.e., physical science, scientific reasoning, life science and earth science. The middle school science and the high school 9-10 science teachers calendared these strands. During 2004-05, K-5 teachers implemented both the physical science and the scientific reasoning kits as part of the first formal year of the K-5 implementation. Each kit, in accordance with the partner grant agreements, required eighteen hours of professional development.

While the intent of this professional development was and is sound, authentic frustrations arose during the process; thirty-six hours of science professional development for each K-5 teacher, in addition to their other tasks and professional development needs, was draining. The district's approach was revisited in response to this concern. Building science leaders now lead and facilitate most of the professional development necessary, enabling more flexibility and a job-embedded structure more conducive to feeling supportive.

During 2005-06, elementary teachers implemented the life science kits. These were very engaging for the elementary children. The elementary focus then was on the life or biological sciences and was enhanced by the literacy integration of science notebooking as a discrete skill set. The science notebooking is an important skill set as the students need to practice the lab write-ups and journal entries a "real scientist" might utilize in the field. This focus was continued into 2006-07.

During 2006-07, elementary teachers implemented the last of the four planned strands, the earth science strand. The building science leaders completed this training during the spring round of grade level team meetings. The science kit assessments were also reviewed and refined at the elementary level. Professional development will be continuing in the fall as previously done for new teachers and those teachers new to a grade level.

During 2005-06 and 2006-07, middle school science curriculum implementation was a significant focus. This sweeping transition for grades 6-8 was not without challenges. The OESD did not receive the full amount of grant monies they believed to be accorded them for the purchase of the various science kits, so the number of kits for each middle school was cut. This dilemma has been exacerbated by the movement of sixth grade to the elementary schools as there are now five sites to supply with sixth grade science kits. The committee spent a significant amount of time during the current year discussing this, and is making recommendations to remedy this dilemma.

The middle school science department agreed on one consistent notebooking format for the upcoming year. During the past years, two different middle level formats were piloted. Both had strengths, but now with one middle school a decision was made to all be responsible for science notebook strategies and instruction in a similar fashion. This is especially important as the students will soon be attending the high school where there is a consistent standard and expectation for the notebooks at grade nine.

During 2005-06, the Port Angeles High School Science Department researched best practices for science instruction, and alignment of internal assessments to the external assessment structure our state has designed. The department identified a textbook and curriculum materials determined to be aligned with both content and application for the grade nine course last year, and proposed the book that follows the sequence as a result of study during the 2006-07 year. These materials utilize the inquiry approach to instruction which is consistent with the district focus on inquiry-based instructional strategies. The department will continue with professional development that supports the use of these new materials as the materials are in year three of their use.

### **PARAMETERS**

The current parameters within which the Science Curriculum Committee works include material fiscal constraints, time for the necessary on-going professional development, kit replenishment costs and processes, and challenging facility need.

Further, the state has just revised the science standards for grades kindergarten through tenth grade. This requires significant review of curricular integrity and a thorough review of our internal assessments again.

### **PROCESS**

Building science leaders continue to be responsible for implementing new content, assessments, and notebook expectations and they led the professional development work for their colleagues. In essence, the science building leaders have provided an example of the job-embedded professional development we have worked so hard to develop in the district in other content areas.

The district Science Curriculum Committee met twice monthly during the 2008-09 year during the winter and spring months. At the June meeting, the committee made several final recommendations, at least two of which were moved forward as textbook adoption requests to the district Instructional Materials Committee for their consideration at their June 16 meeting.

### **SCIENCE CURRICULUM COMMITTEE RECOMMENDATIONS**

One of the most time consuming matters the committee undertook was the decision regarding the appropriate science kits to be taught at sixth grade and the order in which they ought to best be taught. In the end, due to financial constraints and the new state standards, the following science kits were determined to be the best choices: 1) *Models and Designs*; 2) *Levers and Pulleys*; 3) *Landforms*; and 4) *Food and Nutrition*. These are kits provided by the ESD and are included in the rotation with other school districts in the region.

Sixth grade teachers as well as the district science committee had input into this decision and came to consensus on the recommendation. Coco Carlson, Stevens Middle School science teacher, is going to provide sixth grade teachers professional development on the new kits in August 2009. These kits will enable attention to the new state science standards and are budget friendly.

With the movement of these kits and topics to the sixth grade, it required some flexibility on the part of the middle school and high schools. The middle school science staff after a review of their curriculum agreed to take the 'rock cycle' in their grade spans and the high school agreed to take the climate and weather units in their grade ten curriculum. The *Earth History* and the *My Body and Me* kits will be integrated into the work at the middle level as well.

Several meetings were devoted to the topics of science remediation and enrichment. Various strategies are being utilized across the district to these ends. While the Highly Capable Student Programs Task Force met this spring in often parallel discussions, it is clear that intensified level of science will need to be studied in the coming year for those highly capable ninth grade students, which also qualifies as a lab science course. At the middle level, highly capable science students are 'clustered' to assist in differentiated instructional opportunities. A similar approach is taken at the elementary grade level.

There were some adjustments made at the other grade levels in the elementary program as well. At grade five, the time teachers will have *Astro-Adventures* will be shortened so that more time can be spent on the *Variables* kit which is a much more robust content kit.

At the first grade level, the *Insects* kit was made optional as more often than not the insects arrived dead or near death. This also enables a better time sequencing for building community in the classroom at the beginning of the year and a deeper experience with *Solids and Liquids* and the *Air and Weather* kits

With regard to assessment, it is recommended that the district reporting tool for the internal assessments connected to the science kits mirror the internal sheets required for other content area. This will increase our collective responsibility for kit coverage.

It was acknowledged that where there may be class splits due to enrollment and staffing patterns, a decision will need to be made as to which kit to work with. There will be more study on this in the coming year as the need arises.

At the high school level, the committee reviewed the new biology course proposals and the requisite texts staff was looking to use. Several books are still being reviewed for these courses. It is recognized that biology is a necessary elective at the high school level.

Another continuing development aiding planning is the ability this coming year to have all the elementary schools on the same kit schedule (see Appendix A), i.e., all doing the life science kit at the same time. This will really help those students who may move from building to building within the system. The coherence is intentional and will aid in the ability to provide equity across the system for both students and teachers. Systemic changes have been recommended and communicated to the OESD along with the kit changes at different grade levels.

Science notebooks have been ordered for grades K-8. Expectations, rubrics and annotated entries will be revisited with staff and students in the fall. Building science leaders will assist in this work. As writing is such an integral aspect of the WASL science assessment, this review is imperative.

As the committee looks forward to the work in 2009-10 and beyond, the topics of lesson study and science notebooking continue to be most prominent. The committee plans to continue its current structure of meetings, and to refine their professional development skills, both in content and process.

Members have learned a great deal together these past few years, listened thoughtfully, reflected on practices and recommendations, and remained grounded in inquiry instruction for science literacy, and to that end, were supportive of the classroom with regard to improvement of science teaching and learning. Internal data collection processes will also continue to improve in the coming year.

With the new state standards, more time will be required to make sure all topics are getting focused attention. Student achievement gains are expected to continue to flourish with this focused work.

Appendix A

Science Kit Schedule

Cycle	Grade	September	January	April	
12 wk cycle	K		Wood/Paper	Animals 2x2	
	1	Insects (optional)	Solids/Liquids	Air & Weather	
	2	Pebbles	Balance/Motion	New Plants	
	3	Earth Materials	Physics of Sound	Human Body	
	4	Water	Electricity/Magnetism	Structures of Life	
10 wk @ beginning	5	Astro-Adventures	Variables	Environments	Mixtures/Solutions
10 wk @ beginning	6	Models Design	Lever & Pulleys	Landforms	Food & Nutrition