

WASHINGTON SCIENCE ADVISORY PANEL

February 28, 2008 Meeting Notes

The Washington Science Advisory Panel held a second meeting to hear the preliminary recommendations for the current Washington science standards, set forth by David Heil & Associates, Inc. The panel meeting was held at the Puget Sound ESD, in Renton, on February 28th from 10:00am to 4:00pm. This meeting was intended to provide a review of the preliminary recommendations that were conducted following an Expert Panel Review, provide a project update, present the methodology for and findings and recommendations from the Expert Review, provide panel members with an open forum for discussion of the recommendations, and to discuss the next steps in the review process. This document summarizes notes from the meeting for each of the following agenda items:

- **Welcome**
Introductions by all attendees
Jeff Vincent, Washington Science Advisory Panel Chair
Kathe Taylor, Policy Director, Washington State Board of Education
- **Project Update**
Presentation by David Heil, Co-Director
- **Presentation of Methodology for the Expert Panel's Review**
Presentation by Kasey McCracken, Project Manager
- **Presentation of Findings from the Expert Panel's Review**
Presentation by Harrold Pratt, Co-Director
Open forum
- **Presentation of Preliminary Recommendations**
Presentation by Rodger Bybee, Co-Director
- **Panel Discussion of Preliminary Recommendations**
Open forum
- **Next Steps – Why This Work Matters**
Presentation by Jeff Vincent

Washington Science Advisory Panel Members in Attendance:

Panel Chair: Jeff Vincent, SBE Board Member

- Len Adams
- Jeffrey Bierman
- Georgia Boatman
- Theresa Britschgi
- Chris Carlson
- Grant Fjermedal
- Jen Fox
- Mario Godoy-Gonzalez
- Judy Kjellman
- Sheldon Levias
- Michael McCaw
- Brian MacNevin
- Judy Morrison
- George (Pinky) Nelson
- Kimberly Olson
- Steve Olson
- Ethan Smith
- Barbara Taylor
- Kristen White

DHA Project Team Members in Attendance:

- David Heil, Co-Director
- Rodger Bybee, Co-Director
- Harold Pratt, Co-Director
- Kasey McCracken, Project Manager
- Lauren Seyda, Project Assistant

SBE Staff in Attendance:

- Kathe Taylor, Policy Director

Observers:

- Mary McClellan, OSPI Staff
- Wayne Gilman, OSPI Staff
- Cinda Parton, OSPI Staff

Welcome

Jeff Vincent, Washington Science Advisory Panel Chair

Kathe Taylor, Policy Director

Jeff Vincent provided a welcome to the meeting, stressing the idea that this review process is the first step in helping our children get where they need to be. Vincent thanked and acknowledged the observers from OSPI and reminded the panel that they will be the ones putting this review into operational form. He concluded by encouraging every member of the panel to get excited about this process and that this is a collaborative, team process. These next steps are crucial in helping students cross the finish line.

Kathe Taylor provided several housekeeping notes, including informing panelists of the letter contained in the meeting folder from The Washington Coalition for Gifted Education group.

Project Update

David Heil, Co-Director

David Heil reviewed the project timeline, remarking that the project is on-track. Heil informed members that a report was made to the State Board to brief them of the strengths, weakness, and other prioritized lists determined from the first Advisory Panel meeting. Heil informed the Panel of a recent email discussion among Washington educators discussing the issue of alignment between the current science standards and the WASL. He emphasized that the current review is focusing on the standards and while it may address issues of alignment throughout the science education system, it is not intended to provide a formal study of the alignment between the science standards and the WASL.

Heil provided a brief summary of the Expert Review Panel, including a brief description of each panel member's background in science education and the development of state and national science standards. He noted that panel members were selected to ensure that they were able to dive into the rigorous, two-and-a-half day review process.

Presentation of Methodology for the Expert Panel's Review

Kasey McCracken, Project Manager

Kasey McCracken discussed the methodology used during the Expert Panelist's review, which was facilitated January 24-26, 2008. McCracken acknowledged the eight Expert Review Panelists' skills, experience, and competence when participating in the rigorous process. The review was divided into four blocks:

- Review of EALR 1 for Content Specificity, Coherence, & Depth
- Review of the whole document for Accessibility & Balance
- Review of EALRs 1, 2, & 3 for Rigor, Clarity, & Measurability
- Review of EALRs 2 & 3 for Content, Specificity, Coherence, & Depth

The Expert Panelist's review also consisted of facilitated discussions of standards for 11th and 12th grades and implementation considerations.

McCracken presented the Final Review Criteria Definitions that were used to develop the scoring guides and protocols that were employed by the Expert Panelists:

- **Rigor.** Grade Level Expectations (GLEs) and Evidences of Learning (ELs) are written at an appropriate level for the student's age and the grade level to which they are assigned.
- **Clarity.** GLEs have a minimum of technical vocabulary and no jargon.
- **Measurability.** The Evidence of Learning statements (ELs) provide guidance for the assessment of the GLEs.
- **Content.** GLEs include the most fundamental concepts/outcomes in the science disciplines, matching well-respected benchmarks, and GLEs are scientifically accurate.
- **Specificity.** The description of the content or skill is detailed enough to provide an adequate definition of the learning outcome.
- **Coherence.** GLEs build on the knowledge and skill from the previous grade levels in a manner such that the learning progression of content from one grade level to the next level is recognizable.
- **Depth.** Fundamental concepts/outcomes are fully developed in each content area.
- **Accessibility.** The document contains enough detail for use by curriculum developers and assessment specialists, and the document can be easily navigated.
- **Balance.** There is an appropriate allocation of GLEs for each of the three disciplines and there is an appropriate distribution of GLEs representing subject matter content, skills and processes of inquiry, and applications.

Additional highlights from this presentation include:

- The benchmark states and nations included in the review were California, Colorado, Massachusetts, Finland, and Singapore.
- The National Science Education Standards (NSES) were the primary reference document for rating many of the criteria. They were used as the reference to develop ratings for the science standards for Washington and the benchmark states and nations. The Science Framework for the 2009 National Assessment of Educational Progress was also used as a reference for the rating of some criteria.
- Reviewers were trained on the use of scoring guides, which included four point scales for each criterion, and were provided with explicit instructions as to what material should be referenced in each document under review.
- With the exception of the reviews for Accessibility and Balance, the approximately 2 hour review blocks included an independent review followed by team meetings to develop consensus ratings using the scales. Reviewers were divided into 2 to 3 teams by discipline or grade span, depending on the review. The reviews for Accessibility and Balance included an independent review followed by a group discussion of the median scores from the reviews.
- Responding to a panelist question regarding reference documents used by the Expert Review Panel, McCracken clarified that the panel thoroughly reviewed three state documents (California, Colorado, and Massachusetts) and two nation documents (Finland and Singapore), as well as the NSES document. Singapore's document coincides with a curriculum-based assessment, much like the WASL, which Finland's document is competency based and independent of curriculum.

Presentation of Findings from the Expert Panel's Review

Harrold Pratt, Co-Director

Harrold Pratt provided an overview of the findings from the Expert Panel's review and allowed panel members an open forum for questions and discussions about the findings. It was noted that the current Washington standards received relatively good ratings, but moving from "good to excellent" is the final goal. Pratt reviewed each slide, further describing each criterion and how they were used by the Expert Review Panel.

Also highly emphasized throughout this presentation was the differentiation between standards and curriculum.

Harold Pratt – It is essential that all people using the standards understand that we are using CONTENT standards – what all students should learn at certain levels. Content standards are not curriculum. Curriculum is made locally. Curriculum is not instructional material. Curriculum is what is done around instructional materials, which are based on standards.

Comments and Questions from Discussion:

- Responding to a comment regarding concerns about the WASL questions and scoring, OPSI stated that when the standards are completed, OSPI is compelled to align the test with the new standards. A revision and retooling of the standards may mean a rewrite of the WASL.
- Several questions and comments were made regarding the use of Finland and Singapore in the Expert Panel Review and how they compare demographically to Washington. The DHA project team explained that these nations were selected primarily based on their performance on the international TIMSS and PISA assessments.
- One panelist questioned the quantitative assignments for “some,” “most,” and “all.” Kasey McCracken responded that reviewers were given rating scales that included references, such as the NSES, to use as anchors when determining their ratings for Washington and the benchmark states and nations. The team process for developing a consensus rating was also used to increase the reliability of the rating process.
- Panelists noted that it is imperative that students have a sense of relevance and can relate science to daily life. Students should have the ability to look at and explain issues scientifically, or know where to look for the answers.
- Roger Bybee notes that prior to the rewrite process, Washington needs to have a very clear vision as to what and when it wants students to know certain sciences.
- Several participants would like to see more emphasis on life sciences, particularly from an industry standpoint.
- David Heil indicated that the current standards were found to use systems terminology but that they do not use a systems approach. Many Panelists agreed that aside from the label on the left hand column, the document does not use a systems approach.

Presentation of Preliminary Recommendations

Rodger Bybee, Co-Director

This presentation began by posting a weblink to the National Science Education Standards so that Panel members can reference the document. This document can be found at <http://www.nap.readingroom/books/nses/pdf/index.html>. The Science Content Standards are provided in Chapter Six.

Rodger Bybee began the discussion by noting that the morning was spent examining findings related to Washington’s current science standards and that the afternoon would be devoted to thinking forward to a new set of science standards for the state of Washington. Bybee emphasized that recommendations being presented were draft recommendations. He also explained that current Washington standards terminology (EALRs, GLEs, etc.) was deliberately excluded from the discussion of the recommendations to signify that the discussion is related to a new science standards

document for the state of Washington, rather than a basic revision of the current document. Bybee complimented the quality of the current standards but suggested the new document should move the science standards from “very good” to “excellent.”

Rodger Bybee – Before anything is written, it is imperative to know, and be very clear on, what the vision is and who the document is being written for.

PowerPoint slides were presented first with a brief overview from Bybee, and then a second time allowing for one-by-one elaboration and discussion by the Advisory Panel.

Highlights from the presentation include:

- It is recommended that the Washington science standards be completely rewritten rather than simply revised.
- The new document should include standards for all students in grades K-12.
- In addition to recommendations to support re-writing the standards, recommendations are provided to support policy and implementation decisions regarding the standards.
- Standards related to students’ abilities in critical thinking and problem-solving are emphasized to support the development of a successful 21st century workforce.

Highlights from the Panel Discussion include:

The panel discussed grade span versus grade level standards for the new document:

- For the high school level, the DHA project team recommended the use of a 9-12 grade span because it provides more flexibility for course sequencing and interdisciplinary courses.
- Some panelists expressed concern that a 9-12 grade span would not define what students must know for the 10th grade WASL. And unless the WASL is taken on the last day of 12th grade, how can a 9-12 grade band be assessed?
- Observers from OSPI stated that a 10th grade assessment gives an opportunity for students to relearn during 11th and 12th grades and provides remediation for those who need it.
- Other panelists expressed concern that a 9-12 grade band may be too large; the complexity of coursework for 12th graders may be too high for 9th graders.
- There was discussion of changing the structure or timing of the WASL to accommodate for variations in when students complete each science course.
- Some panelists suggested using the college readiness as a guide for 11th and 12th grade assessment, as opposed to a test in 10th grade when students still have two more years of high school to complete.
- Kathe Taylor reported that the Washington State Board of Education is actively discussing the possibility of integrated course exams, like some states are moving towards.

The panel discussed the broader implications of the implementation of new science standards:

- Some panelists appreciated the new perspective that would be introduced by the inclusion of standards related to the NSES Science in Personal and Social Perspectives content but others expressed concern that this material would distract from other core science areas such as the Life Sciences. One panelist also questioned why this material is important to include in the Washington standards when it is not represented any of the benchmark state standards.
- It was suggested that the science standards are a floor, not a ceiling, and that these are the basic standards for all students. Other opportunities must be made available for those needing more challenging standards.
- Panelists expressed concern over where AP coursework will fit into the standards rewrite. The DHA project team clarified that AP classes are a curricular choice by the learner and are different than Washington's general standards.
- Regarding AP courses versus general studies, panelists discussed the idea that all students be given the same opportunity to be prepared for post-secondary education, regardless of what public school they attend. If the standards are to be met, then standards of equal opportunity must exist in the education system.
- One panelist noted that some students are not put into science classes in middle school because they are required to focus their schoolwork on English and writing.
- Panelists agreed that Washington should map out a visual path to show the linkages between standards and assessment with the other components of the education system shown in between.

The DHA project team and an OSPI representative clarified the process for reviewing and re-writing the science standards.

- The DHA team clarified that they are not responsible for rewriting the document.
- Mary McClellan, from OSPI, provided additional background on the process:
 - After an endorsement of the review and after the Rewrite Team has been chosen, there will be a formal handoff to the Rewrite Team in late May.
 - The Panel will meet again in December to assess the new science standards.
 - Work on this process is a team effort and OSPI is committed to a complete and successful document.

Rodger Bybee – Moving from “good” to “excellent” will be a challenge but it allows Washington the opportunity to surpass comparison states, meet the goals outlined in Washington Learns, and it will provide competency for industry and workforce needs.

Next Steps – Why This Work Matters

Jeff Vincent, Washington Science Advisory Panel Chair

Note. PowerPoint posted on website.

Jeff Vincent provided an overview of the importance and urgency of the science standards rewrite, stating that this needs to be a comprehensive, cooperative approach.

After accomplishing a successful rewrite, there is still work to be done to get every

student across the finish line; curriculum and instructional choices are just as, if not more, difficult as the rewriting of the standards document.

Jeff Vincent – Performance on the science WASL will count as a graduation requirement beginning with the class of 2013. Despite having a three to four year head start on the WASL, how do we catch up?

Highlights from this presentation include:

- In 2006-2007, only 36% of sophomores met standard on the science WASL.
- Large groups of students performed substantially worse, including minorities, low-income, and non-native English speakers.
- Scores need to be in the mid-80s by 2013 to hold science in place.
- Washington needs to map out a visual path to emphasize a holistic approach. This visual path will lead into a Science Action Plan.

Conclusion

David Heil, Co-Director

David Heil concluded the Panel Meeting with general information regarding the calendar and timeline for the recommendations and final report. Heil encouraged the panel to let their voices be heard, especially the teachers in the group. Additionally, Heil suggested that Advisory Panel members should email DHA with any suggestions that they have for obtaining public input on the recommendations.