

THE WASHINGTON STATE BOARD OF EDUCATION

Accountability | World-Class Math and Science Standards | Meaningful Diploma/CORE 24

Old Capitol Building, Room 253
P.O. Box 47206
600 Washington St. SE
Olympia, Washington 98504

Randy Dorn, Superintendent
Office of Superintendent of Public Instruction
Old Capitol Building
Olympia, Washington 98504

Dear Superintendent Dorn:

We are responding to your letter dated June 30, 2009, requesting guidance from the State Board of Education (SBE) and the SBE Science Advisory Panel on your preliminary recommendations for science instructional materials.

We understand that ESSB 5414, Section 5 (7)(c) directed you to “present to the SBE recommendations for no more than three basic science curricula each for elementary and middle school grade spans and not more than three recommendations for each of the major high school courses within the following science domains: Earth and space science, physical science, and life science.”

We are offering our official comment and recommendations within the two-month response period mandated by the above legislation. Most of our recommendations are based on the advice of our Science Advisory Panel, which met on August 7, 2009 to discuss the *K-12 Core Science Instructional Materials Review June 2009 Preliminary Report and Initial Recommendations* prepared by the Office of Superintendent of Public Instruction (OSPI).

A table at the end of this letter compares the SBE recommendations with the OSPI preliminary recommendations.

General Comments/Recommendations

The instructional materials review process was strong. We affirm the integrity of OSPI’s instructional materials review process. The process was strengthened by using many reviewers to provide feedback, and by weighting and tabulating scores to form a single, “composite” score.

The instructional materials recommended will need supplementation, both to align with standards and to address the needs of students seeking advanced study in science.

- No curriculum program aligned perfectly with the new science standards or satisfied all of OSPI's Instructional Materials Review evaluation criteria; your staff's work to identify areas where supplementary materials will be needed is crucial.
- The science standards (and the curriculum materials that are aligned with them) are designed to bring all students to a level of scientific literacy needed to be an informed citizen. However, the recommended curriculum materials may be inadequate for the level of rigor or depth that students who intend to pursue advanced study will need (particularly those intending to pursue Science, Technology, Engineering, and Mathematics (STEM) study in college).
- Curriculum directors should be advised that the curriculum programs will need supplementation for both of the reasons cited above.

A state plan is needed to help districts purchase instructional materials that are current and can be updated readily.

- The state should explore online materials to help make current scientific information accessible.
- The state should provide funding assistance for districts to regularly replace outdated materials.

Comments/Recommendations About Specific Instructional Materials

The Science Advisory Panel recognized the usefulness of a cut-off score for the purpose of making preliminary recommendations. At the same time, panel members determined that an arbitrary cut-off score has limits, and therefore took a fresh look at the overall scores that contributed to the composite score. Panel members sought to add value to the decision making process by considering the conceptual development reviews of the expert, independent reviewers. Those reviews had not been factored into the calculation of the composite scores. In the case of the elementary programs, the Panel also weighed the implications of making no recommendation at all.

After considering the input of the Science Advisory Panel, the SBE makes the following recommendations regarding the specific instructional materials.

ELEMENTARY PROGRAMS

Recommend the three elementary curricula that received the highest composite scores: Science Companion (Chicago Science Group), Science and Technology for Children (STC) (Carolina Biological Supply), and FOSS (Delta Education).

In your June 30, 2009 transmission letter that accompanied the *K-12 Core Science Instructional Materials Review June 2009 Preliminary Report and Initial*

Recommendations, you asked the SBE and Science Panel for guidance, “with particular interest...regarding the elementary programs...”

Although no elementary curricula met the designated cut-off score, and therefore were not included in the Superintendent’s preliminary recommendations, the Science Advisory Panel felt strongly, and the SBE concurs, that clear, state-level guidance is needed in order to encourage more and better science at the elementary level, where students’ exposure to science is most limited. A recommendation (vs. no recommendation) will better serve teachers’ and students’ needs.

The conceptual reviews of the three curricula with the highest ratings were generally positive and indicated that all were aligned with the National Science Education Standards (NSES); Washington’s standards are based on the NSES Standards. Of interest, but not “the” determining factor, was the fact that two of the programs with the highest composite scores (STC and FOSS) are being used by 70 percent of the 230 districts responding to an OSPI survey; the state has a considerable investment in these programs.

The Science Advisory Panel believed the recommendation should be provisional, noting that each curriculum needs to be more explicit and intentional about incorporating the cross-cutting systems, inquiry and application standards. These are good points. However, SBE believes that the Instructional Materials Review Preliminary Report clearly communicates the strengths and limits of each curriculum program. By identifying areas where supplementation will be needed, OSPI can help districts and publishers recognize and target areas for improvement.

MIDDLE SCHOOL PROGRAMS

Maintain the Superintendent’s preliminary recommendations: Science Explorer (Prentice Hall), Middle Level Modules in Life, Earth and Physical Science (Holt McGougal), and Full Option Science System (FOSS) (Delta Education).

The Science Advisory Panel’s analysis supported the Superintendent’s preliminary recommendations. Panel members also suggested an “honorable mention” for the two programs (LA: Issue Series, IAT: Earth/Life/Physical Series) that met the cut-off composite score, but could not be considered because the legislative directive asked the Superintendent to recommend no more than three curricula per level.

HIGH SCHOOL PROGRAMS

Maintain the Superintendent’s preliminary recommendations for Biology, Earth Sciences, Physical Science and Physics.

The Science Advisory Panel’s analysis supported the Superintendent’s preliminary recommendations. For this reason, the Board supports recommendations for:

Biology

Biology: A Human Approach—Kendall Hunt (BSCS)

Insights in Biology—Kendall/Hunt

Earth Sciences

Earth-Comm—It's About Time Publishing

Physical Science

Active Physical Science—It's About Time Publishing

Foundations of Physical Science—CPO Science

Physics

Active Physics—It's About Time Publishing

In chemistry, look again at the recommendation to include *Chemistry*—Kendall/Hunt.

The Science Advisory Panel recognized that the composite score for *Chemistry*—Kendall/Hunt was on the cusp. The overall content scores for the domain standards, particularly in relation to several programs that did not meet the cut-off, were of sufficient concern that panel members thought a second look was warranted.

Maintain the Superintendent's preliminary recommendations for Integrated Science (*Science—An Inquiry Approach*—Kendall Hunt, and *Coordinated Science*—It's About Time Publishing), with a caveat that districts using *Coordinated Science* would be advised to supplement the curriculum with one of the recommended biology programs.

In your June 30, 2009 transmission letter that accompanied the *K-12 Core Science Instructional Materials Review June 2009 Preliminary Report and Initial Recommendations*, you asked the SBE and Science Panel for guidance, "with particular interest...regarding the...integrated programs." One of the recommended programs, *Coordinated Science*, exceeded the .7 composite cut-off score, despite the fact that it did not include a life science component.

The Science Advisory Panel considered the conceptual review and the overall scores, and concluded that the recommendation should be maintained, with the caveat noted above. The conceptual review notes that the program is "not truly integrated across fields; each field given its own section of the text." Panel members saw this potential weakness as a strength; biology could be added without violating the integrity of the program.

Finally, as you know, the SBE is very supportive of science education, and has included three credits of science for all students in the CORE 24 graduation requirements framework approved in July 2008. We also believe that in order for Washington State to maintain its leadership in the fields of science and technology, students who intend to

prepare for STEM careers at a community and technical or four-year college, should pursue the appropriate level of technical, mathematics, and science preparation in high school; usually, this includes 4 years of science, 4 years of math, and relevant technical courses.

Your leadership in aligning the new science and math standards, curriculum and assessment is crucial to our efforts to improve science literacy for all students, and to encourage more student interest in STEM-related fields. We look forward to working with you in our collective efforts to best serve the students of this state.

Sincerely,

A handwritten signature in black ink, appearing to read "Mary Ryan" followed by a horizontal line.

Mary Jean Ryan, Chair

Comparison of SPI Preliminary Recommendations with
SBE Official Comment and Recommendations

SPI Preliminary Recommendations	SBE Recommendations
No Initial Recommendations at the Elementary Level.	Recommend the three elementary curricula that received the highest composite scores: <ul style="list-style-type: none"> • <i>Science Companion</i> (Chicago Science Group) • <i>Science and Technology for Children (STC)</i> (Carolina Biological Supply) • <i>Full Option Science System (FOSS)</i> (Delta Education)
At the middle school level: <ul style="list-style-type: none"> • <i>Science Explorer</i>—Pearson (Prentice Hall) • <i>Middle Level Modules in Life, Earth and Physical Science</i> (Holt McDougal) • <i>Full Option Science System (FOSS)</i> (Delta Education) 	At the middle school level: <ul style="list-style-type: none"> • <i>Science Explorer</i>—Pearson (Prentice Hall) • <i>Middle Level Modules in Life, Earth and Physical Science</i> (Holt McDougal) • <i>Full Option Science System (FOSS)</i> (Delta Education)
High School Life Science: <ul style="list-style-type: none"> • <i>Biology: A Human Approach (BSCS)</i> (Kendall Hunt) • <i>Insights in Biology</i> (Kendall Hunt) 	High School Life Science: <ul style="list-style-type: none"> • <i>Biology: A Human Approach (BSCS)</i> (Kendall Hunt) • <i>Insights in Biology</i> (Kendall Hunt)
High School Earth and Space: <ul style="list-style-type: none"> • <i>EarthComm</i> (It's About Time Publishing) 	High School Earth and Space: <ul style="list-style-type: none"> • <i>EarthComm</i> (It's About Time Publishing)
High School Physical Science: <ul style="list-style-type: none"> • <i>Active Physical Science</i> (It's About Time Publishing) • <i>Foundations of Physical Science</i> (CPO Science) 	High School Physical Science: <ul style="list-style-type: none"> • <i>Active Physical Science</i> (It's About Time Publishing) • <i>Foundations of Physical Science</i> (CPO Science)
High School Physics: <ul style="list-style-type: none"> • <i>Active Physics</i> (It's About Time Publishing) 	High School Physics: <ul style="list-style-type: none"> • <i>Active Physics</i> (It's About Time Publishing)
High School Chemistry: <ul style="list-style-type: none"> • <i>Active Chemistry</i> (It's About Time Publishing) • <i>Chemistry</i> (Kendall Hunt) 	High School Chemistry: <ul style="list-style-type: none"> • <i>Active Chemistry</i> (It's About Time Publishing) <p>Look again at the recommendation to include <i>Chemistry</i> (Kendall Hunt).</p>
High School Integrated Science: <ul style="list-style-type: none"> • <i>Science: An Inquiry Approach</i> (Kendall Hunt) 	High School Integrated Science: <ul style="list-style-type: none"> • <i>Science: An Inquiry Approach</i> (Kendall Hunt)

<ul style="list-style-type: none"> • <i>Coordinated Science</i> (It's About Time Publishing) 	<ul style="list-style-type: none"> • <i>Coordinated Science</i> (It's About Time Publishing) <p>Add a caveat that districts using <i>Coordinated Science</i> would be advised to supplement the curriculum with one of the recommended biology programs.</p>
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In addition, the SBE made the following three general comments:

- The instructional materials review process was strong.
- The instructional materials recommended will need supplementation, both to align with standards and to address the needs of students seeking advanced study in science.
- A state plan is needed to help districts purchase instructional materials that are current and can be updated readily.