

I. Teacher Preparation

A. Elementary School Licensure Requirements

1. Licensure Grade Levels¹

a. Does the state offer an Early Elementary Education credential (Preschool/Kindergarten to Grade 2/3)?	Yes	Early Childhood Education
b. Does the state offer an Elementary Education credential (Kindergarten/Grade 1 to Grade 5/6)?	Yes	Elementary Education

2. Early Elementary^{2,3}

a. Is an educational practice examination required for licensure?	Yes
b. Is an examination in reading and writing or language arts required for licensure?	Yes
c. Is a mathematics examination required for licensure?	Yes
d. Is a science examination required for licensure?	No

3. Elementary Education^{2,3}

a. Is an educational practice examination required for licensure?	No
b. Is an examination in reading and writing or language arts required for licensure?	Yes
c. Is a mathematics examination required for licensure?	Yes
d. Is a science examination required for licensure?	Yes

4. Licensure Renewal

a. What is the period of validity for an educator's license?	Less than 5 years	
	5 years	X ⁴
	Greater than 5 years	

b. Can in-service teachers receive certification credit for professional development courses/programs in Earth and Space Sciences?	Yes	X	It depends on if earth and space sciences are recommended for the teacher's initial renewal, or if the teacher chooses a class in earth and space sciences for the 5 year renewal process that comes at year 10 or beyond. ⁵
	No		
	Local issue		
	Unknown		

B. Elementary School Curriculum Support

1. Guidelines for Curriculum Development

a. Does the SEA provide guidelines for curriculum development, beyond the state's science standards?	No
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b. If yes, which of the	1. Science frameworks		
	2. Curriculum maps		

following does the state provide?	3. Learning progressions		
	4. Benchmark maps		
	5. Templates for unit design		
	6. Curriculum development guides		
	7. Model units		
	8. Lesson plan templates/guides		
	9. Web-based lesson plan portals		
	10. Model lesson plans		
	11. Assessment guidelines		

2. Instructional Materials⁶

a. At what level does adoption of instructional materials occur?	State level	
	Local level	X

b. If the state is an adoption state, do adopted materials in science include those that address topics specific to the geosciences?	N/A	
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3. Support for New Standards⁵

a. Does that state provide resources to school systems to effectively implement the standards as they change?	Yes	X	<p>The curriculum and resources are local control decisions. WA has 9 regional hubs that provide professional development. The hubs provide common learning opportunities on the orientation on implementation of NGSS.</p> <p>WA State LASER also provides professional development opportunities for teachers. Washington State LASER is a state science-education program led by Pacific Science Center and Battelle along with the Office of Superintendent of Public Instruction, Educational Service Districts and school districts. Washington State LASER hosts a variety of events to help school districts begin their science education reform efforts, and continue to make progress and networking with other districts after they have begun.</p>
	No		
	Local issue		
	Unknown		

4. Professional Development⁵

a. Does the SEA provide professional development that is, at least in part, specific to the geosciences?	Yes, provided by SEA		Teachers participate in the WA LASER events, and teachers volunteer to participate in GLOBE, WET, and WILD.
	Yes, but independent of SEA	X	
	No		
	Local issue		
	Unknown		

II. Curriculum

A. Elementary School State Science Standards

1. Organization⁷

a. What is the name of the state's elementary school science standards?		The Next Generation Science Standards (NGSS). The NGSS are being called Washington State 2013 Science Learning Standards.		
b. What is the grade-level arrangement of the standards?		Grade specific	X	
		Grade-level bands		
		Benchmark grade levels		
c. How are the standards outlined?	Overarching standard statements (level one)	X	d. What terms are used to identify each level?	Performance Expectations
	Sub-standard statements that provide more detail to the overarching standards (level two)			

2. Content⁷

a. Are the science standards subdivided according to scientific discipline (Physical Science, Life Science, and Earth and Space Science)?	Yes	The standards are grouped into four major domains: 1) Physical Sciences 2) Life Sciences 3) Earth and Space Sciences 4) Engineering, Technology, and Applications of Science
b. Are the Earth and Space Science standards identified by core ideas in the geosciences?	Yes	The standards can be organized according to Disciplinary Core Idea (DCI). The DCIs for Earth and Space Sciences are: <u>ESS1 Earth's Place in the Universe</u> -ESS1A: The Universe and its Stars -ESS1B: Earth and the Solar System -ESS1C: The History of Planet Earth <u>ESS2 Earth's Systems</u> -ESS2A: Earth Materials and Systems -ESS2B: Plate Tectonics and Large-Scale Systems -ESS2C: The Role of Water in Earth's Surface Processes -ESS2D: Weather and Climate -ESS2E: Biogeology <u>ESS3 Earth and Human Activity</u> -ESS3A: Natural Resources -ESS3B: Natural Hazards -ESS3C: Human Impacts on Earth Systems -ESS3D: Global Climate Change
c. Do the state's standards	Yes	K: Students look the impact of humans on the local environment

include current issues in the geosciences? Current issues in the geosciences can be described as Earth science processes altered by human activities or Earth science processes that affect human well-being.		and consider ways to reduce that impact. 1: Students look at design solutions that reduce the impacts of weather-related hazards. 4: Students examine renewable and non-renewable energy resources and how their uses affect the environment 5: Students consider the impact of human activities on the environment and ways that these impacts can be reduced and resources and the environment can be protected.
d. Do the state's standards include career exploration in the geosciences?	No	

3. Development

a. When were the standards adopted or last revised?	Within the last two years (2014-2015)		October 1, 2013 ⁷
	Between 3-6 years ago (2010-2013)	X	
	Between 7-10 years ago (2006-2009)		
	More than 10 years ago (before 2006)		

b. Does the state have plans to review/revise its science standards?	Currently under review		The NGSS were adopted October 2013. It will be several years for them to be fully implemented. The 4-year transition plan includes professional development on equity and access, cross cutting principles and the integration of the 3 dimensions, review of materials and assessment. ⁵
	Within the next 5 years (2015-2020)		
	Between 5 and 10 years from now (2020-2025)		
	No plan or timeline exists	X	
	Unknown		

B. Middle School State Science Standards

1. Content⁷

a. What is the name of the state's middle school science standards?	Washington State 2013 Science Learning Standards (Next Generation Science Standards)
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

C. High School State Science Standards

1. Content⁷

a. What is the name of the state's high school science standards?	Washington State 2013 Science Learning Standards (Next Generation Science Standards)
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

D. High School Course Requirements

1. Credits Required for Graduation⁸

a. What is the total number of credits required for graduation?	24
b. What is the number of science credits required for graduation?	3

2. Course Content⁸

a. Is Life Science required?	No
b. Is Physical Science required?	No
c. Is Earth Science required?	No
d. Is Environmental Science required?	No
e. Is Earth Science accepted?	Not stated
f. Does Earth Science have to be lab-based?	Not stated

III. Instruction

A. Elementary School Approaches to Instruction

1. State Science Standards⁷

a. Do the state's science standards provide guidelines regarding any specific approach to be used for science teaching?	Yes
b. If so, what is the term used to identify this approach?	NGSS Science and Engineering Practices

c. Do the state's science standards provide a rationale for this approach?	Yes
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d. If so, what is the rationale?	Engaging in the practices of science helps students understand how scientific knowledge develops; such direct involvement gives them an appreciation of the wide range of approaches that are used to investigate, model, and explain the world. Engaging in the practices of engineering likewise helps students understand the work of engineers, as well as the links between engineering and science. Participation in these practices also helps students form an understanding of the crosscutting concepts and disciplinary ideas of science and engineering; moreover, it makes students' knowledge more meaningful and embeds it more deeply into their worldview.
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2. Guidelines for Curriculum Planning

a. If the state offers guidelines for curriculum planning, do these advocate more specific strategies for science instruction?	No
b. If so, what are the strategies?	N/A

3. Technology⁵

a. Are decisions regarding the use of technology in elementary science classrooms made at the state level or local level?	Local level
b. What kinds of technology are being used by elementary school science teachers in the state?	Determined at the local level.

IV. Learning Contexts

A. Elementary School Classrooms

1. Class Size⁵

a. What is the average number of students in an elementary classroom?	Unknown (local data)
b. What is the maximum allowable number of students in an elementary classroom?	Unknown (local data)

2. Instructional Time⁵

a. At the elementary level, are teachers recommended or required to dedicate a certain amount of instructional time to science?	There is no time requirement		
	Local decision	X	
	Teachers must spend a certain amount of time teaching science.		
	Unknown		

B. Elementary School Support Services

1. Specialized Support⁵

a. Are there specific policies in place regarding English as a Second Language (ESL) and Special Education services that could impact science instruction (e.g. pull-out or push-in models)?	Local level decision	X	Modifications would be made by individual teachers in local districts.
	Depends on the specifications of a student's IEP or ILP		
	Teachers must follow specific practices regarding science		
	Unknown		

V. Extra-Curricular Programs

A. Elementary School Geosciences Enrichment Opportunities

1. After-School and Informal Education⁵

a. Are opportunities to engage in geoscience-related topics outside of school (e.g. after-school programs and informal education programs) being offered to students in the state?	Yes
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b. If so, what are they?	<p>Programs are dependent on the local districts to offer them. Examples of programs include:</p> <ul style="list-style-type: none"> • Central WA University Geosciences Night • Puget Sound Science Center programs • Home Waters Island Wood program • KTCS- Public Broadcasting Organizations meet twice a year and programming centers around NGSS.
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2. Remedial Education⁵

a. What remedial supports are in place for geosciences topics with which students are struggling?	Local level decision	X	
	Remediation services are being provided to students in science		
	No remediation support in science		
	Unknown		

VI. Monitoring Systems

A. Elementary School Statewide Science Assessment

1. Structure and Content

a. What is the name of the statewide standardized test in science at the elementary level?	Measurements of Student Progress (MSP) Science ⁹
b. At what grade(s) is the assessment implemented?	5 ⁹
c. Does the statewide science assessment measure achievement of the state's standards, i.e. is the assessment aligned with state standards?	Yes ¹⁰
d. Is the content of the statewide science assessment sub-divided by discipline, namely Physical Science, Life Science, Earth and Space Science?	Yes ¹¹

e. Are there any plans for revising or changing the current elementary level science assessment?	No plans for revision		The MSP Science statewide assessment is aligned to the Washington State 2009 K-12 Science Learning Standards. Development for a new assessment, aligned to the Washington State 2013 Science Learning Standards (a.k.a NGSS) began during the 2014-2015 school year. The assessment work will start with the construction of test blueprints, item specifications, and pilot item development. The SEA will solicit the involvement of grade-level and content-expert teachers of science during the process. The first operational year for the new assessment is predicted to be no earlier than the spring of 2017. ¹²
	Revision is planned, but timeline is unknown		
	Revision is planned with implementation date set	X	
	Unknown		

2. Results¹³

a. Is student achievement measured by Performance Level Descriptors?	Yes
b. If yes, how many performance levels are there?	4

3. District Level Reporting¹⁴

a. At the district level, are the percentages of students performing at each PLD reported to the public?	Yes	The State has created a site from which the public can access results on the MSP Science assessment at the district level. Results provided to the public are not subdivided by discipline.
b. At the district level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No	
c. If yes, is this data available to the public?	No	

4. State Level Reporting¹⁴

a. At the state level, are the percentages of students performing at each PLD reported to the public?	Yes	Not to the public. Test scores are aggregated and
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b. At the state level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No	not subdivided.
c. If yes, is this data available to the public?	No	

B. Elementary School International Assessments in Science

1. TIMSS¹⁵

a. Has the state participated in the Trends in International Mathematics and Science Study (TIMSS)?	No
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b. If yes, in which years did the state participate?	1995	
	2003	
	2007	
	2011	

C. Middle School Statewide Science Assessment

1. Structure and Content¹⁶

a. What is the name of the statewide standardized test in science at the middle school level?	Measurements of Student Progress (MSP) Science
b. At what grade(s) is the assessment implemented?	8
c. Does the assessment address Life Science concepts?	Yes
d. Does the assessment address Life Science concepts?	Yes
e. Does the assessment address Earth Science concepts?	Yes

C. High School Statewide Science Assessment(s)

1. Structure and Content¹⁶

a. What is the name of the state's standardized science assessment(s)?	End-of-Course (EOC)Biology
b. At what grade level is the assessment implemented?	10
c. Does the assessment address Life Science concepts?	Yes
d. Does the assessment address Physical Science concepts?	No
e. Does the assessment address Earth Science concepts?	No

VII. Accountability

A. School Level

1. Individual Student

a. Does the state produce an Individual Student Report (ISR) that describes a student's performance on the state's science assessment?	Yes ¹⁷	<p>School districts provide a Measurements of Student Progress Individual Score Report to parents/guardians and teachers. This report describes an individual student's performance on statewide assessments in terms of scale score and proficiency level.</p> <p>Grade 5 reports include student performance on the science assessment in terms of scale score and proficiency level. In addition, results are subdivided according to specific sections of the test.</p> <p>Science test sections are: Systems of Science: Understand the scientific concepts of physical, earth/space and living systems. Inquiry in Science: Use inquiry processes and the nature of science to investigate systems. Application of Science: Apply scientific concepts and processes to design solutions to human problems.</p>
b. Is the ISR made available to a student's parents or guardians?	Yes ¹⁷	
c. Is the ISR made available to a student's teacher?	Yes ⁵	
d. Does the ISR report student's performance in terms of scale score and achievement level?	Yes ¹⁷	
e. Does the ISR subdivide results by science discipline (Physical Science, Life Science, Earth and Space Science)?	Yes ¹⁷	

2. Teacher Appraisal⁵

a. Are students' results on the statewide science assessment a component of teacher evaluation?	Can be
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B. District Level

1. District Accreditation⁵

a. Are student outcomes in statewide science assessments at the elementary level part of accreditation of public schools at the district level?	Yes		There are no improvement plans for science.
	No	X	
	At a future point		
	Local decision		
	Unknown		

C. State Level

1. Statewide Monitoring⁵

a. Are student outcomes in statewide science assessments at the elementary level used in monitoring the adequacy of state educational systems?	Yes	State report cards are used for monitoring and available on the web.
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2. Trends in Student Outcomes¹⁴

a. Does the SEA report to the public performance results on the state science assessment over time?	Yes
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b. If yes, how many years of achievement data are available?	3 years (2011-2012 to 2013-2014)		
	4-7 years (2007-2008 to 2013-2014)	X	5 years of data (2009-2014)
	8 to 10 years (2004-2005 to 2013-2014)		
	11 or more years (before 2004-2005)		

c. Are the results also subdivided by science discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No
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¹ State of Washington, Office of Superintendent of Public Instruction, Certification, Teachers, Basic Requirements: <http://www.k12.wa.us/certification/Teacher/generalrequirements.aspx>

² State of Washington, Office of Superintendent of Public Instruction, Certification, Teachers, Teacher Assessments: <http://www.k12.wa.us/certification/Teacher/teachertesting.aspx>

³ WEST, Washington Educator Skills Test, Tests: http://www.west.nesinc.com/PageView.aspx?f=GEN_Tests.html

⁴ State of Washington, Office of Superintendent of Public Instruction, Certification, Teachers, Initial/Initial Renewal: <http://www.k12.wa.us/certification/Teacher/Continuing.aspx#continuing>

⁵ State of Washington, Office of Superintendent of Public Instruction (personal communication).

⁶ State of Washington, Office of Superintendent of Public Instruction, Teaching and Learning, Instructional Materials Reviews and Supports: <http://www.k12.wa.us/CurriculumInstruct/InstructionalMaterialsReview.aspx>

⁷ State of Washington, Office of Superintendent of Public Instruction, Science, Next Generation Science Standards: <http://www.k12.wa.us/Science/NGSS.aspx>

⁸ The Washington State Board of Education, Graduation Requirements: <http://www.sbe.wa.gov/graduation.php#.VVshfUbMnEb>

⁹ State of Washington, Office of Superintendent of Public Instruction, State Testing: <http://www.k12.wa.us/assessment/StateTesting/MSP.aspx>

¹⁰ State of Washington, Office of Superintendent of Public Instruction, Science, Assessments, Educator Resources, Science Assessment Update, Grade 5, 2014, PDF: <http://www.k12.wa.us/Science/EducatorResources.aspx>

¹¹ State of Washington, Office of Superintendent of Public Instruction, Science, Assessments, Test and Item Specifications, Grade 5 Test and Item Specification, PDF: <http://www.k12.wa.us/Science/TestItemSpec.aspx>

¹² State of Washington, Office of Superintendent of Public Instruction, Science, Assessments, Assessing Learning standards adopted in 2013, PDF:

<http://www.k12.wa.us/Science/Assessments.aspx>

¹³ State of Washington, Office of Superintendent of Public Instruction, Science, Assessments, State Testing, Performance Levels, Science, Grade 5, PDF:

<http://www.k12.wa.us/assessment/StateTesting/PLD/default.aspx>

¹⁴ State of Washington, Office of Superintendent of Public Instruction, Washington State Report Card:

<http://reportcard.ospi.k12.wa.us/DataDownload.aspx>

¹⁵ U.S. Dept. of Education, Institute of Education Sciences, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), State and District Participation in TIMSS:

<https://nces.ed.gov/TIMSS/benchmark.asp>

¹⁶ State of Washington, Office of Superintendent of Public Instruction, State Testing:

<http://www.k12.wa.us/assessment/StateTesting/>

¹⁷ State of Washington, Office of Superintendent of Public Instruction, State Testing, Individual Score Reports (MSP):

<http://www.k12.wa.us/assessment/StateTesting/ScoreReportMSP.aspx>