

## **I. Teacher Preparation**

### ***A. Elementary School Licensure Requirements***

#### **1. Licensure Grade Levels<sup>1</sup>**

a. Does the state offer an Early Elementary Education credential (Preschool/Kindergarten to Grade 2/3)?	Yes	Early Childhood (Age 8 - Grade 3)
b. Does the state offer an Elementary Education credential (Kindergarten/Grade 1 to Grade 5/6)?	Yes	Elementary Teacher (K - 6)

#### **2. Early Elementary<sup>2</sup>**

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

#### **3. Elementary Education<sup>2</sup>**

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 <sup>3</sup>
	Greater than 5 years	

b. Can in-service teachers receive certification credit for professional development courses/programs in Earth and Space Sciences?	Yes	X	Yes, Earth and Space science programs are permitted for renewal. <sup>4</sup>
	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 following does the state provide?	1. Science frameworks		
	2. Curriculum maps		
	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 Materials<sup>5</sup>

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 Standards<sup>4</sup>

a. Does that state provide resources to school systems to effectively implement the standards as they change?	Yes	X	Foundation grants are provided to districts that would assist school systems with resources.
	No		
	Local issue		
	Unknown		

## 4. Professional Development<sup>4</sup>

a. Does the SEA provide professional development that is, at least in part, specific to the geosciences?	Yes, provided by SEA		The state provides district professional development on an array of topics through the year.
	Yes, but independent of SEA		
	No		
	Local issue	X	It would be up to local districts to participate in GLOBE, WET or WILD.
	Unknown		

## II. Curriculum

### *A. Elementary School State Science Standards*

#### **1. Organization<sup>6</sup>**

a. What is the name of the state's elementary school science standards?	Wyoming Science Content and Performance Standards
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b. What is the grade-level arrangement of the standards?	Grade specific	
	Grade-level bands	
	Benchmark grade levels	X (Grades 4 and 8)

c. How are the standards outlined?	Overarching standard statements (level one)	X	d. What terms are used to identify each level?	Content Standards
	Sub-standard statements that provide more detail to the overarching standards (level two)	X		Benchmarks

#### **2. Content<sup>6</sup>**

a. Are the science standards subdivided according to scientific discipline (Physical Science, Life Science, and Earth and Space Science)?	Yes	<p>There are three overarching standards:</p> <ol style="list-style-type: none"> <li>1) Concepts and Processes</li> <li>2) Science as Inquiry</li> <li>3) History and Nature of Science in Personal and Social Decisions</li> </ol> <p>The Benchmarks for Standard 1: Concepts and Processes are organized according to three categories:</p> <ol style="list-style-type: none"> <li>1) Life Systems</li> <li>2) Earth and Space Systems</li> <li>3) Physical Systems</li> </ol>
b. Are the Earth and Space Science standards identified by core ideas in the geosciences?	Yes	<p>Earth and Space Systems Benchmarks are organized according to three core ideas:</p> <ol style="list-style-type: none"> <li>1) Properties of Earth Materials</li> <li>2) Objects in the Sky</li> <li>3) Changes in Earth and Sky</li> </ol>
c. Do the state's standards 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	Yes	<p>There are three overarching standards:</p> <ol style="list-style-type: none"> <li>1) Concepts and Processes</li> <li>2) Science as Inquiry</li> <li>3) History and Nature of Science in Personal and Social Decisions</li> </ol> <p>Content Standard 3: History and Nature of Science in Personal and Social Decisions contains the following benchmarks at grade 4: Students recognize how scientific information is used to make decisions.</p> <ul style="list-style-type: none"> <li>• Identify and describe local science issues, such as environmental hazards or resource management.</li> </ul>

affect human well-being.		• Suggest feasible solutions and personal action plans to address an identified issue.
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)		November 19, 2008 <sup>6</sup>
	Between 3-6 years ago (2010-2013)		
	Between 7-10 years ago (2006-2009)	X	
	More than 10 years ago (before 2006)		

b. Does the state have plans to review/revise its science standards?	Currently under review		The adoption of NGSS is being considered. A new Science Standards Review Committee has been named and has started their review of the standards. Their first meeting is scheduled for June 15, 2015. <sup>4</sup>
	Within the next 5 years (2015-2020)	X	
	Between 5 and 10 years from now (2020-2025)		
	No plan or timeline exists		
	Unknown		

### B. Middle School State Science Standards

#### 1. Content<sup>6</sup>

a. What is the name of the state's middle school science standards?	Wyoming Science Content and Performance 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. Content<sup>6</sup>**

a. What is the name of the state's high school science standards?	Wyoming Science Content and Performance 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 Graduation<sup>7</sup>**

a. What is the total number of credits required for graduation?	13 (does not include electives)
b. What is the number of science credits required for graduation?	3

#### **2. Course Content<sup>7</sup>**

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 Standards<sup>6</sup>**

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?	Science as Inquiry
c. Do the state's science standards provide a rationale for this approach?	Yes
d. If so, what is the rationale?	Inquiry is the foundation for the development of content and processes of science that enable students to construct their own knowledge. This standard addresses students' ability to safely conduct investigations and develop an understanding of inquiry, enriching their knowledge of science. The Science as Inquiry Standard emphasizes the process of confronting accepted ideas and gaining new information through research and investigation.

##### **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. Technology<sup>4</sup>**

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?	Local control

## **IV. Learning Contexts**

### ***A. Elementary School Classrooms***

#### **1. Class Size<sup>4</sup>**

a. What is the average number of students in an elementary classroom?	The average classroom size is 18-22 students. It depends on the district and school.
b. What is the maximum allowable number of students in an elementary classroom?	Unknown

#### **2. Instructional Time<sup>4</sup>**

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	X	Usually, students spend 30 minutes per day on science.
	Local decision		
	Teachers must spend a certain amount of time teaching science.		
	Unknown		

### ***B. Elementary School Support Services***

#### **1. Specialized Support<sup>4</sup>**

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	Remediation focuses on math and reading skills. ESL and special education services would follow IEPs and local decisions for assistance.
	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 Education<sup>4</sup>**

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?	Local level data
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b. If so, what are they?	<p>Programs would vary on the region of the state. The state office does not monitor those initiatives unless they are grant funded.</p> <p>Local districts may have partnerships with other organizations.</p>
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**2. Remedial Education<sup>4</sup>**

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?	Proficiency Assessments for Wyoming Students (PAWS) <sup>8</sup>		
b. At what grade(s) is the assessment implemented?	4 <sup>8</sup>		
c. Does the statewide science assessment measure achievement of the state's standards, i.e. is the assessment aligned with state standards?	Yes <sup>9</sup>		
d. Is the content of the statewide science assessment sub-divided by discipline, namely Physical Science, Life Science, Earth and Space Science?	Yes <sup>9</sup>		
e. Are there any plans for revising or changing the current elementary level science assessment?	No plans for revision		Most likely the new assessment will be implemented in 2018 <sup>4</sup>
	Revision is planned, but timeline is unknown		
	Revision is planned with implementation date set	X	
	Unknown		

#### **2. Results<sup>10</sup>**

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

#### **3. District Level Reporting<sup>11</sup>**

a. At the district level, are the percentages of students performing at each PLD reported to the public?	Yes	The SEA provides an on-line platform that allows the public to view results on the statewide assessment at the district level.
b. At the district level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No	Results provided are aggregated and reported according to performance level. They are not subdivided by discipline.
c. If yes, is this data available to the public?	No	The SEA website does not specify whether district level reports are produced for educators and are not available to the public.

#### 4. State Level Reporting<sup>11</sup>

a. At the state level, are the percentages of students performing at each PLD reported to the public?	Yes	The SEA provides an on-line platform that allows the public to view results on the statewide assessment. Results are aggregated and not subdivided by discipline.
b. At the state 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	

#### B. Elementary School International Assessments in Science

##### 1. TIMSS<sup>12</sup>

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 Content<sup>13</sup>

a. What is the name of the statewide standardized test in science at the middle school level?	Proficiency Assessments for Wyoming Students (PAWS)in 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 Physical Science concepts?	Yes
e. Does the assessment address Earth Science concepts?	Yes

***C. High School Statewide Science Assessment(s)***

**1. Structure and Content<sup>13</sup>**

a. What is the name of the state's standardized science assessment(s)?	ACT Explore Assessment	ACT Plan Assessment	ACT Assessment
b. At what grade level is the assessment implemented?	9	10	11
c. Does the assessment address Life Science concepts?	Yes	Yes	Yes
d. Does the assessment address Physical Science concepts?	Yes	Yes	Yes
e. Does the assessment address Earth Science concepts?	Yes	Yes	Yes

## **VII. Accountability**

### ***A. School Level***

#### **1. Individual Student<sup>14</sup>**

a. Does the state produce an Individual Student Report (ISR) that describes a student's performance on the state's science assessment?	Yes	<p>Schools provide an Individual Student Report (ISR) to parents/guardians. This report describes an individual student's performance on statewide assessments in terms of scale score and performance level.</p> <p>Grade 4 reports include student performance on the science assessment in terms of scale score and proficiency level. In addition, the report has a Content Performance by Domain section.</p> <p>For Science, the Domain areas reported are: Life Science Earth and Space Science Physical Science</p> <p>Two copies of the Individual Student Report are provided to schools. One copy is sent home to parents.</p> <p>In addition, teachers receive Class Summary Reports that provide teachers class results across skills assessed. These are designed to help teachers make curricular or instructional adjustments.</p>
b. Is the ISR made available to a student's parents or guardians?	Yes	
c. Is the ISR made available to a student's teacher?	Yes	
d. Does the ISR report student's performance in terms of scale score and achievement level?	Yes	
e. Does the ISR subdivide results by science discipline (Physical Science, Life Science, Earth and Space Science)?	Yes	

#### **2. Teacher Appraisal<sup>4</sup>**

a. Are students' results on the statewide science assessment a component of teacher evaluation?	Yes
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### ***B. District Level***

#### **1. District Accreditation<sup>4</sup>**

a. Are student outcomes in statewide science assessments at the elementary level part of accreditation of public schools at the district level?	Yes	X	Science data is used to improve instruction
	No		
	At a future point		
	Local decision		
	Unknown		

**C. State Level**

**1. Statewide Monitoring<sup>4</sup>**

a. Are student outcomes in statewide science assessments at the elementary level used in monitoring the adequacy of state educational systems?	Yes	It is an obligation to make it available to the public.
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**2. Trends in Student Outcomes<sup>11</sup>**

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	7 years of data (2007-2014)
	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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<sup>1</sup> Wyoming Professional Teaching Standards Board, PTSB Endorsements by Grade/Age Level: <http://ptsb.state.wy.us/Licensure/EndorsementAreas/tabid/129/Default.aspx>

<sup>2</sup> Educational Testing Service, Praxis, Wyoming, Test Requirements, Wyoming Test Requirements: <http://www.ets.org/praxis/wy/requirements/>

<sup>3</sup> Wyoming Professional Teaching Standards Board, Licensure, Renewing a License or Permit, Renewal Requirements of Wyoming Educator License or Permit: <http://ptsb.state.wy.us.dnnmax.com/Licensure/RenewingALicenseorPermit/tabid/67/Default.aspx>

<sup>4</sup> Wyoming Department of Education (personal communication).

<sup>5</sup> Education Commission of the States, State Textbook Adoption: <https://www.ecs.org/clearinghouse/57/75/5775.htm>

<sup>6</sup> Wyoming Department of Education, Content/Performance Standards, Science, Standards 2008 Science: <http://edu.wyoming.gov/educators/standards/science/>

<sup>7</sup> Wyoming Department of Education, Chapter 31, Wyoming Graduation Requirements: <https://edu.wyoming.gov/downloads/standards/chapter-31-rules-clean-may-2013.docx>

<sup>8</sup> Wyoming Department of Education, Statewide Assessment System, Wyoming Statewide Assessment System Composition, Elementary and Middle Grades Assessments (grades 3-8): <http://edu.wyoming.gov/educators/assessment/>

<sup>9</sup> Wyoming Department of Education, State Assessment Topics, PAWS, Grade 4, Science, Grade 4 Science Blueprint: <http://edu.wyoming.gov/educators/assessment/paws/grade-4/>

<sup>10</sup> Wyoming Department of Education, State Assessment Topics, PAWS Results, 2013-2014 School Year Results, ACT and PAWS Results Aggregated – State Level: <http://edu.wyoming.gov/educators/assessment/paws/results/>

<sup>11</sup> Wyoming Department of Education, FUSION: <http://fusion.edu.wyoming.gov/MySites/Home/default.aspx>

<sup>12</sup> 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>

<sup>13</sup> Wyoming Department of Education, Statewide Assessment System, Wyoming Statewide Assessment System: <http://edu.wyoming.gov/educators/assessment/>

<sup>14</sup> Educational Testing Service, Wyoming Department of Education, Test Administration, 2014 Wyoming State Assessment Program Score Report Interpretation Guide for Teachers for PAWS & SAWS (PDF):

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<http://wyedu.ets.org/administration/index.html>