I. Teacher Preparation

A. Elementary School Licensure Requirements

1. Licensure Grade Levels[1]

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

2. Early Elementary[2]

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?	Yes

3. Elementary Education[2]

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?	Yes

4. Licensure Renewal

a.	What is the period of validity for an educator's license?	Less than 5 years	
		5 years	X[3]
		Greater than 5 years	

b.	Can in-service teachers receive certification credit for professional development courses/programs in Earth and Space Sciences?	Yes	X	Most likely the courses would be approved through the Education Standards and Practices Board.[4]
		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

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[5]

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	

3. Support for New Standards

a. Does that state provide resources to school systems to effectively implement the standards as they change?	Yes		It will be up to the local districts to provide the resources and professional development needed to implement the standards. The North Dakota Science Content and Achievement Standards, K-12, was published in March, 2006. The Next Generation Science Standards (NGSS) was released in April of 2013 for states to consider adoption. In the summer of 2013, the ND Department of Public Instruction convened a committee to review, draft, and recommend a new set of State science content standards based on the NGSS. The North Dakota Science Content Standards (Draft) was released for public comment in April 2014. This new set of standards is still being reviewed.[4]
	No		
	Local issue	X	
	Unknown		

4. Professional Development

a. Does the SEA provide professional development that is, at least in part, specific to the geosciences?	Yes, provided by SEA		
	Yes, but independent of SEA		
	No		
	Local issue	X[4]	
	Unknown		

II. Curriculum

A. Elementary School State Science Standards

1. Organization[6]

a. What is the name of the state's elementary school science standards?	The North Dakota Science Content and Achievement Standards, K-12

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?	Content Standards
	Sub-standard statements that provide more detail to the overarching standards (level two)	X		Benchmark Expectations

2. Content[6]

a. Are the science standards subdivided according to scientific discipline (Physical Science, Life Science, and Earth and Space Science)?	Yes	North Dakota Science Content and Achievement Standards, K-12 (March 2006) Yes – Standards are organized by 8 content areas: 1) Unifying Concepts 2) Science Inquiry 3) Physical Science 4) Life Science 5) Earth and Space Science 6) Science and Technology 7) Science and Other Areas 8) History and Nature of Science
b. Are the Earth and Space Science standards identified by core ideas in the geosciences?	Yes	North Dakota Science Content and Achievement Standards, K-12 (March 2006) Earth and Space Science Standard benchmarks are subdivided by the following topics: Weather, Seasons, and Climate Earth's Surface Objects in the Sky Solar System The Universe
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 affect human well-being.	No	North Dakota Science Content and Achievement Standards, K-12 (March 2006) None
d. Do the state's standards include career exploration in the	Yes	North Dakota Science Content and Achievement Standards, K-12 (March 2006)

geosciences?		- Standard 8: History and Nature of Science Grade 3: Identify ways people of all ages, genders, and backgrounds use science in their careers and in daily life. Grade 4: Identify a variety of careers in the field of science

3. Development

a. When were the standards adopted or last revised?	Within the last two years (2014-2015)		March, 2006[6]
	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	X	The North Dakota Science Content and Achievement Standards, K-12, was published in March, 2006. In summer 2013, the ND Department of Public Instruction convened a committee of approximately 45 North Dakota content specialists and teachers to review, draft, and recommend the state's future science content standards. Through a collaborative, state led process, new K–12 North Dakota science standards based on NGSS were developed. The North Dakota Science Content Standards was released for public comment in April 2014. A Public Comment Survey was conducted and the results published by the North Dakota Science Content Standards Development Committee. The SEA website does not provide any more information as to the status and adoption of the North Dakota Science Content Standards.[7]
	Within the next 5 years (2015-2020)		
	Between 5 and 10 years from now (2020-2025)		
	No plan or timeline exists		
	Unknown		

B. Middle School State Science Standards

1. Content[6]

a. What is the name of the state's middle school science standards?	The North Dakota Science Content and Achievement Standards, K-12
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[6]

a. What is the name of the state's high school science standards?	The North Dakota Science Content and Achievement Standards, K-12
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[8]

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

2. Course Content[8]

a. Is Life Science required?	Yes
b. Is Physical Science required?	Yes
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[6]

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 enables students to construct their own knowledge. Students should be encouraged to safely conduct investigations, thus enriching their knowledge of science. Science inquiry guides the process of challenging 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[4]

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 decision.

IV. Learning Contexts

A. Elementary School Classrooms

1. Class Size[4]

a. What is the average number of students in an elementary classroom?	Approximately 18-20 is the average size.
b. What is the maximum allowable number of students in an elementary classroom?	Unknown

2. Instructional Time[4]

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	Approximately 30 minutes per day is spent on science instruction. It is not mandated.
	Local decision		
	Teachers must spend a certain amount of time teaching science.		
	Unknown		

B. Elementary School Support Services

1. Specialized Support[4]

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	
	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[4]

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?	No

b. If so, what are they?	N/A

2. Remedial Education[4]

a. What remedial supports are in place for geosciences topics with which students are struggling?	Local level decision	X	Focus is on reading and math achievement.
	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[9]

a. What is the name of the statewide standardized test in science at the elementary level?	North Dakota State Assessment Science, Grade 4
b. At what grade(s) is the assessment implemented?	4
c. Does the statewide science assessment measure achievement of the state's standards, i.e. is the assessment aligned with state standards?	Yes
d. Is the content of the statewide science assessment sub-divided by discipline, namely Physical Science, Life Science, Earth and Space Science?	Yes

e. Are there any plans for revising or changing the current elementary level science assessment?	No plans for revision	X	It will be 3 years or more before the assessment changes. It depends on the change in current standards. The North Dakota State Assessment in Science, Grade 4 is aligned to the North Dakota Science Content and Achievement Standards, K-12 (March 2006). A new set of science standards has been drafted and are currently being reviewed (North Dakota Science Content Standards, April 2014). [4]
	Revision is planned, but timeline is unknown		
	Revision is planned with implementation date set		
	Unknown		

2. Results[10]

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

3. District Level Reporting[11]

a. At the district level, are the percentages of students performing at each PLD reported to the public?	Yes	SEA produces a District Profile report for each district in the state that provides the results of students from the district on the North Dakota State Assessment Science, Grade 4. District Profile reports provide results on the North Dakota State Assessment Science, Grade 4 in aggregated form as well as broken down by the average number of correct answers on items identified according to the Standards and Benchmarks of the North Dakota Science Content and Achievement Standards, K-12 (March 2006). Scores are given for the following standards: 1) Unifying Concepts ; 2) Science Inquiry; 3) Physical Science; 4) Life Science; 5) Earth and Space Science; 6) Science and Technology; 7) Science and Other Areas; 8) History and Nature of Science
b. At the district level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	Yes	
c. If yes, is this data available to the public?	Yes	

4. State Level Reporting[12]

a. At the state level, are the percentages of students performing at each PLD reported to the public?	Yes	The SEA produces the North Dakota State Profile report that provides the results of the North Dakota State Assessments. In addition to providing aggregate results, the report provides a breakdown of the average number of correct answers on items identified according to the Standards and Benchmarks of the North Dakota Science Content and Achievement Standards, K-12 (March 2006).
b. At the state level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	Yes	
c. If yes, is this data available to the public?	Yes	

B. Elementary School International Assessments in Science

1. TIMSS[13]

a. Has the state participated in the Trends in International Mathematics and Science Study (TIMSS)?	No

b. If yes, in which years did the state participate?	1995	
	2003	
	2007	
	2011	

C. Middle School Statewide Science Assessment

1. Structure and Content[14]

a. What is the name of the statewide standardized test in science at the middle school level?	North Dakota State Assessment 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 Content

a. What is the name of the state's standardized science assessment(s)?	North Dakota State Assessment Science[14]	ACT Assessment[15]
b. At what grade level is the assessment implemented?	11	11
c. Does the assessment address Life Science concepts?	Yes	Yes
d. Does the assessment address Physical Science concepts?	Yes	Yes
e. Does the assessment address Earth Science concepts?	Yes	Yes

VII. Accountability

A. School Level

1. Individual Student[4]

a. Does the state produce an Individual Student Report (ISR) that describes a student's performance on the state's science assessment?	Yes	The report is subdivided by emphasis areas, which are based on the standards.
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

a. Are students' results on the statewide science assessment a component of teacher evaluation?	Unknown

B. District Level

1. District Accreditation

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

C. State Level

1. Statewide Monitoring

a. Are student outcomes in statewide science assessments at the elementary level used in monitoring the adequacy of state educational systems?	Unknown	

2. Trends in Student Outcomes[12]

a. Does the SEA report to the public performance results on the state science assessment over time?	Yes

b. If yes, how many years of achievement data are available?	3 years (2011-2012 to 2013-2014)	X	3 years of data (2011-2014)
	4-7 years (2007-2008 to 2013-2014)		
	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)?	Yes

[1] North Dakota, Education Standards and Practices Board, Licensure, License Codes/K-12 Curriculum Codes: http://www.nd.gov/espb/licensure/codes.html
[2] Educational Testing Service, North Dakota Test Requirements, Test Required for All Licensure Areas: http://www.ets.org/praxis/nd
[3] North Dakota, Education Standards and Practices Board, Licensure, Licensure Renewal: http://www.nd.gov/espb/licensure/renewal.html
[4] North Dakota Department of Public Instruction (personal communication).
[5] Education Commission of the States, State Textbook Adoption: https://www.ecs.org/clearinghouse/57/75/5775.htm
[6] North Dakota Department of Public Instruction, State Standards, Content Standards, Science – 2006, North Dakota Science Content and Achievement Standards, K-12, March 2006, PDF: http://www.dpi.state.nd.us/standard/content/science/index.shtm
[7] North Dakota Department of Public Instruction, State Standards, Content Standards, Science – 2014 Draft: http://www.dpi.state.nd.us/standard/content/science2014/science2014.shtm
[8] North Dakota Department of Public Instruction, Graduation Requirements: https://www.dpi.state.nd.us/counselor/nd_grad_req.pdf
[9] North Dakota Department of Public Instruction, Testing and Assessment, Bookmark Standard Setting, 2012-2013 Benchmarks, 2013 NDSA Content Standards/Benchmarks Mapping, PDF: http://www.dpi.state.nd.us/testing/assess/index.shtm
[10] North Dakota Department of Public Instruction, Testing and Assessment, Bookmark Standard Setting, Science Cut Scores, March 2007: http://www.dpi.state.nd.us/testing/assess/index.shtm
[11] North Dakota Department of Public Instruction, ND School District Profiles: http://www.dpi.state.nd.us/dpi/reports/Profile/index.shtm
[12] North Dakota Department of Public Instruction, School District Profile, State Profile Report, North Dakota State Profile 2013-2014, PDF: http://www.dpi.state.nd.us/dpi/reports/Profile/1314/99999.htm
[13] 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
[14] North Dakota Department of Public Instruction, Testing and Assessment: http://www.dpi.state.nd.us/testing/assess/science_assess_resources.shtm
[15] North Dakota Department of Public Instruction: http://www.dpi.state.nd.us/resource/act/act.shtm