

Dear Senators MORTIMER, Thayn, Buckner-Webb, and  
Representatives VANORDEN, McDonald, Kloc:

The Legislative Services Office, Research and Legislation, has received the enclosed rules of the  
State Board of and State Department of Education - State Department of Education:

IDAPA 08.02.03 - Rules Governing Thoroughness - Proposed Rule (Docket No. 08-0203-1703);

IDAPA 08.02.03 - Rules Governing Thoroughness - Proposed Rule (Docket No. 08-0203-1704);

IDAPA 08.02.03 - Rules Governing Thoroughness - Proposed Rule (Docket No. 08-0203-1705).

Pursuant to Section 67-454, Idaho Code, a meeting on the enclosed rules may be called by the  
cochairmen or by two (2) or more members of the subcommittee giving oral or written notice to Research  
and Legislation no later than fourteen (14) days after receipt of the rules' analysis from Legislative  
Services. The final date to call a meeting on the enclosed rules is no later than 11/06/2017. If a meeting is  
called, the subcommittee must hold the meeting within forty-two (42) days of receipt of the rules' analysis  
from Legislative Services. The final date to hold a meeting on the enclosed rules is 12/06/2017.

The germane joint subcommittee may request a statement of economic impact with respect to a  
proposed rule by notifying Research and Legislation. There is no time limit on requesting this statement,  
and it may be requested whether or not a meeting on the proposed rule is called or after a meeting has  
been held.

To notify Research and Legislation, call 334-4834, or send a written request to the address on the  
memorandum attached below.



Eric Milstead  
Director

# Legislative Services Office

## Idaho State Legislature

*Serving Idaho's Citizen Legislature*

### MEMORANDUM

**TO:** Rules Review Subcommittee of the Senate Education Committee and the House Education Committee

**FROM:** Senior Legislative Research Analyst - Elizabeth Bowen

**DATE:** October 18, 2017

**SUBJECT:** State Board of and State Department of Education - State Department of Education  
IDAPA 08.02.03 - Rules Governing Thoroughness - Proposed Rule (Docket No. 08-0203-1703)  
IDAPA 08.02.03 - Rules Governing Thoroughness - Proposed Rule (Docket No. 08-0203-1704)  
IDAPA 08.02.03 - Rules Governing Thoroughness - Proposed Rule (Docket No. 08-0203-1705)

The State Board of Education and State Department of Education submit notice of proposed rulemaking at IDAPA 08.02.03.

Docket No. 08-0203-1703

This rule incorporates by reference the most recent version of the Idaho Extended Content Standards, adopted August 10, 2017, and a new document, the Idaho Content Standards Core Content Connectors ("Connectors"), also adopted August 10. The Connectors identify English and math instruction priorities for students with significant cognitive disabilities.

Negotiated rulemaking was conducted, and there is no anticipated negative fiscal impact on the state general fund. The Board and Department state that this rulemaking is authorized pursuant to Sections 33-105 and 33-2002, Idaho Code.

Docket No. 08-0203-1704

This rule incorporates by reference the most recent version of the Idaho Special Education Manual, adopted on August 10, 2017. Negotiated rulemaking was conducted, and there is no anticipated negative fiscal impact on the state general fund. The Board and Department state that this rulemaking is authorized pursuant to Sections 33-105, 33-1612, and 33-2002, Idaho Code.

Docket No. 08-0203-1705

This rule incorporates by reference the most recent versions of the Idaho Content Standards for Driver Education, Information and Communication Technology, and Science, all adopted on August 10, 2017. Negotiated rulemaking was conducted, and there is no anticipated negative fiscal impact on the state general fund. The Board and Department state that this rulemaking is authorized pursuant to Sections 33-105 and 33-1612, Idaho Code.

cc: State Board of and State Department of Education - State Department of Education  
Helen Price

# IDAPA 08 – STATE BOARD AND STATE DEPARTMENT OF EDUCATION

## 08.02.03 – RULES GOVERNING THOROUGHNESS

DOCKET NO. 08-0203-1703

### NOTICE OF RULEMAKING – PROPOSED RULE

**AUTHORITY:** In compliance with Section 67-5221(1), Idaho Code, notice is hereby given that this agency has initiated proposed rulemaking procedures. The action is authorized pursuant to Sections 33-105 and 33-2002, Idaho Code.

**PUBLIC HEARING SCHEDULE:** Public hearing(s) concerning this rulemaking will be scheduled if requested in writing by twenty-five (25) persons, a political subdivision, or an agency, not later than October 18, 2017.

The hearing site(s) will be accessible to persons with disabilities. Requests for accommodation must be made not later than five (5) days prior to the hearing, to the agency address below.

**DESCRIPTIVE SUMMARY:** The following is a nontechnical explanation of the substance and purpose of the proposed rulemaking:

This proposed rulemaking provides for the amendment of the Idaho Extended Content Standards, incorporated by reference into IDAPA 08.02.03, Section 004, and adds a new incorporated document to IDAPA 08.02.03.004, Idaho Content Standards Core Content Connectors. The Idaho Extended Content Standards, which are the standards aligned with the alternate assessment, were adopted in 2008 and are currently not aligned with the Idaho Content standards adopted in 2010 and updated in 2017. This proposed rule will replace the English Language Arts (ELA) and Math extended standards with the Idaho Content Standards Core Content Connectors (Connectors), which identify the most salient core academic content in English Language Arts and Mathematics found in the Idaho Content Standards. The Connectors identify priorities for the instruction of students identified as having significant cognitive disabilities and align with the alternate assessment. They illustrate the necessary knowledge and skills students with significant cognitive disabilities need to reach the learning targets or critical big ideas within the state standard. The Connectors are written to help promote how students with significant cognitive disabilities can engage in the Idaho Content Standards while following the learning progression. They have the following characteristics:

- Sequenced to help guide meaningful instruction for students with significant cognitive disabilities and lead to enduring skills in successive grades;
- Written as outcome based, which provides a description of what students should know and do;
- Written with high level of expectations for students with significant cognitive disabilities; and
- Align to grade-level standards to provide access to the general curriculum.
- Connectors are designed to contribute to a fully aligned system of content, instruction, and assessment.

**FISCAL IMPACT:** The following is a specific description, if applicable, of any negative fiscal impact on the state general fund greater than ten thousand dollars (\$10,000) during the fiscal year resulting from this rulemaking: There is no fiscal impact.

**FEE SUMMARY:** The following is a specific description of the fee or charge imposed or increased: N/A

**NEGOTIATED RULEMAKING:** Pursuant to Section 67-5220(1), Idaho Code, negotiated rulemaking was conducted. The Notice of Intent to Promulgate Rules - Negotiated Rulemaking was published in the April 4, 2017, Idaho Administrative Bulletin, [Vol. 17-4, pages 32-33](#).

**INCORPORATION BY REFERENCE:** Pursuant to Section 67-5229(2)(a), Idaho Code, the following is a brief synopsis of why the materials cited are being incorporated by reference into this rule:

The Idaho Extended Content Standards is a document incorporated by reference. The Extended Content Standards for ELA and Math are replaced by the Idaho Content Standards Core Content Connectors for ELA and

Math. The Idaho State Board of Education approved amendments the Extended Content Standards and adopted the Idaho Content Standards Core Content Connectors for ELA and Math on August 10, 2017. Because of the number of pages within the documents, the republication of the text would be unduly cumbersome and expensive. Complete copies of Idaho Extended Content Standards and the Idaho Content Standards Core Content Connectors can be found on the State Department of Education’s website at [sde.idaho.gov/topics/admin-rules/](http://sde.idaho.gov/topics/admin-rules/).

**ASSISTANCE ON TECHNICAL QUESTIONS, SUBMISSION OF WRITTEN COMMENTS:** For assistance on technical questions concerning the proposed rule, contact Dr. Charlie Silva, Director of Special Education, at (208) 332-6806 or [csilva@sde.idaho.gov](mailto:csilva@sde.idaho.gov).

Anyone may submit written comments regarding this proposed rulemaking. All written comments must be directed to the undersigned and must be delivered on or before October 25, 2017.

DATED this 10th Day of August, 2017.

Sherri Ybarra  
Superintendent of Public Instruction  
650 West State Street, 2nd Floor  
P.O. Box 83720  
Boise, ID 83720-0027  
Office: (208) 332-6800  
Fax: (208) 334-2228

**THE FOLLOWING IS THE PROPOSED TEXT OF DOCKET NO. 08-0203-1703**  
**(Only Those Sections With Amendments Are Shown.)**

**004. INCORPORATION BY REFERENCE.**

The following documents are incorporated into this rule: (3-30-07)

**01. The Idaho Content Standards.** The Idaho Content Standards as adopted by the State Board of Education. Individual subject content standards are adopted in various years in relation to the curricular materials adoption schedule. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-10)

- a. Arts and Humanities Categories: (3-24-17)
  - i. Dance, as revised and adopted on August 11, 2016; (3-24-17)
  - ii. Interdisciplinary Humanities, as revised and adopted on August 11, 2016; (3-24-17)
  - iii. Media Arts, as adopted on August 11, 2016. (3-24-17)
  - iv. Music, as revised and adopted on August 11, 2016; (3-24-17)
  - v. Theater, as revised and adopted on August 11, 2016; (3-24-17)
  - vi. Visual Arts, as revised and adopted on August 11, 2016; (3-24-17)
  - vii. World languages, as revised and adopted on August 11, 2016. (3-24-17)

- b. Computer Science, adopted on November 28, 2016. (3-24-17)
- c. Driver Education, as revised and adopted on August 21, 2008. (3-29-10)
- d. English Language Arts/Literacy, as revised and adopted on November 28, 2016. (3-24-17)
- e. Health, as revised and adopted on August 11, 2016. (3-24-17)
- f. Information and Communication Technology, as revised and adopted on April 22, 2010. (4-7-11)
- g. Limited English Proficiency, as revised and adopted on August 21, 2008. (3-29-10)
- h. Mathematics, as revised and adopted on August 11, 2016. (3-24-17)
- i. Physical Education, as revised and adopted on August 11, 2016. (3-24-17)
- j. Science, as revised and adopted on April 17, 2009. (3-29-10)
- k. Social Studies, as revised and adopted on November 28, 2016. (3-24-17)
- l. Career Technical Education Categories: (3-29-17)
  - i. Agricultural and Natural Resources, as adopted on June 16, 2016. (3-29-17)
  - ii. Business and Marketing Education, as adopted on June 16, 2016. (3-29-17)
  - iii. Engineering and Technology Education, as adopted on June 16, 2016. (3-29-17)
  - iv. Family and Consumer Sciences, as adopted on June 16, 2016. (3-29-17)
  - v. Skilled and Technical Sciences, as adopted on June 16, 2016. (3-29-17)
  - vi. Workplace Readiness, as adopted on June 16, 2016. (3-29-17)

**02. The English Language Development (ELD) Standards.** The World-Class Instructional Design and Assessment (WIDA) 2012 English Language Development (ELD) Standards as adopted by the State Board of Education on August 16, 2012. Copies of the document can be found on the WIDA website at [www.wida.us/standards/eld.aspx](http://www.wida.us/standards/eld.aspx). (4-4-13)

**03. The Limited English Proficiency Program Annual Measurable Achievement Objectives (AMAOs) and Accountability Procedures.** The Limited English Proficiency Program Annual Measurable Achievement Objectives and Accountability Procedures as adopted by the State Board of Education on November 11, 2009. Copies of the document can be found on the State Department of Education website at [www.sde.idaho.gov](http://www.sde.idaho.gov). (4-7-11)

**04. The Idaho English Language Proficiency Assessment (IELA) Achievement Standards.** The Idaho English Language Assessment (IELA) Achievement Standards as adopted by the State Board of Education on November 11, 2009. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (4-7-11)

**05. The Idaho Standards Achievement Tests (ISAT) Achievement Level Descriptors.** Achievement Level Descriptors as adopted by the State Board of Education on April 14, 2016. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-17)

**06. The Idaho Extended Content Standards.** The Idaho Extended Content Standards as adopted by the State Board of Education on ~~April 17, 2008~~ August 10, 2017. Copies of the document can be found at the State Board of Education website at <https://boardofed.idaho.gov>. (~~5-8-09~~)(    )

~~07.~~ **The Idaho Content Standards Core Content Connectors.** The Idaho Content Standards Core Content Connectors as adopted by the State Board of Education on August 10, 2017. Copies of the document can be found at the State Board of Education website at <https://boardofed.idaho.gov>. ( )

~~a.~~ **English Language Arts,** as adopted by the State Board of Education on August 10, 2017. ( )

~~b.~~ **Mathematics,** as adopted by the State Board of Education on August 10, 2017. ( )

~~078.~~ **The Idaho Alternate Assessment Achievement Standards.** Alternate Assessment Achievement Standards as adopted by the State Board of Education on May 18, 2011. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-12)

~~089.~~ **The Idaho Standards for Infants, Toddlers, Children, and Youth Who Are Deaf or Hard of Hearing.** As adopted by the State Board of Education on October 11, 2007. Copies of the document can be found on the State Board of Education website at [www.boardofed.idaho.gov](http://www.boardofed.idaho.gov). (4-2-08)

~~0910.~~ **The Idaho Standards for Infants, Toddlers, Children, and Youth Who Are Blind or Visually Impaired.** As adopted by the State Board of Education on October 11, 2007. Copies of the document can be found on the State Board of Education website at [www.boardofed.idaho.gov](http://www.boardofed.idaho.gov). (4-2-08)

~~101.~~ **The Idaho Special Education Manual.** The Idaho Special Education Manual as adopted by the State Board of Education on November 28, 2016. Copies of the document can be found on the State Board of Education website at [www.boardofed.idaho.gov](http://www.boardofed.idaho.gov). (3-29-17)

## **INCORPORATION BY REFERENCE SYNOPSIS**

In compliance with Section 67-5223(4), Idaho Code, the following is a synopsis of the differences between the materials previously incorporated by reference in this rule that are currently of full force and effect and newly revised or amended versions of these same materials that are being proposed for incorporation by reference under this rulemaking.

The following agency of the state of Idaho has prepared this synopsis as part of the proposed rulemaking for the chapter cited here under the docket number specified:

**STATE BOARD AND STATE DEPARTMENT OF EDUCATION**  
***IDAPA 08.02.03 - Rules Governing Thoroughness***  
***Proposed Rulemaking - Docket No. 08-0203-1703***

The Language Arts and Math sections of the Idaho Extended Content Standards have been removed and replaced by new incorporated documents, the Idaho Extended Content Standards Core Content Connectors (Connectors) in English Language Arts and Mathematics.

The Idaho Extended Content Standards, standards aligned to the alternate assessment, were adopted in 2008 and were not aligned with the Idaho Content Standards updated in 2017. Along with 24 other states, Idaho worked with the National Center and State Collaborative to create the Connectors. Special education teachers from across the state actively participated in the creation and alignment of the Connectors to the statewide alternative assessment for students with the most significant cognitive disabilities.

The purpose of the Connectors is to identify the most salient core academic content in English Language Arts and Mathematics found in the Idaho Content Standards. The Connectors identify priorities for the instruction of students identified as having significant cognitive disabilities and align with the alternate assessment. They illustrate the necessary knowledge and skills students with significant cognitive disabilities need to reach the learning targets or critical big ideas within the state standard. The Connectors help promote how students can engage in the Idaho Content Standards while following the learning progression. They contribute to a fully aligned system of content, instruction, and assessment.

The Connectors were written to help promote how students with significant cognitive disabilities can engage in the Idaho Content Standards while following the learning progression. They have the following characteristics:

- Sequenced to help guide meaningful instruction for students with significant cognitive disabilities and lead to enduring skills in successive grades;
- Written as outcome based, which provides a description of what students should know and do;
- Written with high level of expectations for students with significant cognitive disabilities; and
- Align to grade-level standards to provide access to the general curriculum.



# IDAPA 08 – STATE BOARD AND STATE DEPARTMENT OF EDUCATION

## 08.02.03 – RULES GOVERNING THOROUGHNESS

DOCKET NO. 08-0203-1704

### NOTICE OF RULEMAKING – PROPOSED RULE

**AUTHORITY:** In compliance with Section 67-5221(1), Idaho Code, notice is hereby given that this agency has initiated proposed rulemaking procedures. The action is authorized pursuant to Sections 33-105, 33-1612, and 33-2002, Idaho Code.

**PUBLIC HEARING SCHEDULE:** Public hearing(s) concerning this rulemaking will be scheduled if requested in writing by twenty-five (25) persons, a political subdivision, or an agency, not later than October 18, 2017.

The hearing site(s) will be accessible to persons with disabilities. Requests for accommodation must be made not later than five (5) days prior to the hearing, to the agency address below.

**DESCRIPTIVE SUMMARY:** The following is a nontechnical explanation of the substance and purpose of the proposed rulemaking:

This rulemaking amends the adoption date of the Idaho Special Education Manual, an incorporated document. The Idaho State Board of Education approved amendments to the Idaho Special Education Manual on August 10, 2017. The updated manual replaces the outdated terms “deafness” and “hearing impairment” with “deaf or hard of hearing.” The definition of “deaf or hard of hearing” now includes language regarding the child’s access, comprehension, and/or use of linguistic information through hearing. In addition, state eligibility criteria for “deafness” and “hearing impairment” have been replaced by criteria for “deaf or hard of hearing.” The modified eligibility criteria, used by evaluation teams when determining the disability category for a student, compliment the updated definition of “deaf or hard of hearing.” Other changes to the manual include minor language corrections or deletions necessary to maintain document consistency and to align with Idaho’s Consolidated State Plan under the Every Student Succeeds Act, Idaho Code, or teacher certification standards.

**FISCAL IMPACT:** The following is a specific description, if applicable, of any negative fiscal impact on the state general fund greater than ten thousand dollars (\$10,000) during the fiscal year resulting from this rulemaking: N/A

**NEGOTIATED RULEMAKING:** Pursuant to Section 67-5220(1), Idaho Code, negotiated rulemaking was conducted. The Notice of Intent to Promulgate Rules – Negotiated Rulemaking was published in the April 5, 2017 Idaho Administrative Bulletin, **Vol. 17-4, pages 34-35**.

**INCORPORATION BY REFERENCE:** Pursuant to Section 67-5229(2)(a), Idaho Code, the following is a brief synopsis of why the materials cited are being incorporated by reference into this rule:

This document is currently incorporated by reference. Incorporation by reference is necessary to ensure compliance with state and federal regulations regarding the education of individuals with disabilities. Because of the number of pages within the document, the republication of the text would be unduly cumbersome and expensive. A complete copy of the proposed changes to the Idaho Special Education Manual can be found on the State Department of Education’s website at <http://sde.idaho.gov/topics/admin-rules/>.

**ASSISTANCE ON TECHNICAL QUESTIONS, SUBMISSION OF WRITTEN COMMENTS:** For assistance on technical questions concerning the proposed rule, contact Dr. Charlie Silva, Director of Special Education, at (208) 332-6806 or [csilva@sde.idaho.gov](mailto:csilva@sde.idaho.gov).

Anyone may submit written comments regarding this proposed rulemaking. All written comments must be directed to the undersigned and must be delivered on or before October 25, 2017.

DATED this 10th day of August, 2017.

Sherri Ybarra  
Superintendent of Public Instruction  
650 West State Street, 2nd Floor  
P.O. Box 83720  
Boise, ID 83720-0027  
Office: (208) 332-6800  
Fax: (208) 334-2228

**THE FOLLOWING IS THE PROPOSED TEXT OF DOCKET NO. 08-0203-1704**  
**(Only Those Sections With Amendments Are Shown.)**

**004. INCORPORATION BY REFERENCE.**

The following documents are incorporated into this rule: (3-30-07)

**01. The Idaho Content Standards.** The Idaho Content Standards as adopted by the State Board of Education. Individual subject content standards are adopted in various years in relation to the curricular materials adoption schedule. Copies of the document can be found on the State Board of Education website at [www.boardofed.idaho.gov](http://www.boardofed.idaho.gov). (3-29-10)

- a.** Arts and Humanities Categories: (3-24-17)
  - i. Dance, as revised and adopted on August 11, 2016; (3-24-17)
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  - iii. Media Arts, as adopted on August 11, 2016. (3-24-17)
  - iv. Music, as revised and adopted on August 11, 2016; (3-24-17)
  - v. Theater, as revised and adopted on August 11, 2016; (3-24-17)
  - vi. Visual Arts, as revised and adopted on August 11, 2016; (3-24-17)
  - vii. World languages, as revised and adopted on August 11, 2016. (3-24-17)
- b.** Computer Science, adopted on November 28, 2016. (3-24-17)
- c.** Driver Education, as revised and adopted on August 21, 2008. (3-29-10)
- d.** English Language Arts/Literacy, as revised and adopted on November 28, 2016. (3-24-17)
- e.** Health, as revised and adopted on August 11, 2016. (3-24-17)
- f.** Information and Communication Technology, as revised and adopted on April 22, 2010. (4-7-11)
- g.** Limited English Proficiency, as revised and adopted on August 21, 2008. (3-29-10)
- h.** Mathematics, as revised and adopted on August 11, 2016. (3-24-17)
- i.** Physical Education, as revised and adopted on August 11, 2016. (3-24-17)
- j.** Science, as revised and adopted on April 17, 2009. (3-29-10)

- k. Social Studies, as revised and adopted on November 28, 2016. (3-24-17)
- l. Career Technical Education Categories: (3-29-17)
- i. Agricultural and Natural Resources, as adopted on June 16, 2016. (3-29-17)
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- iii. Engineering and Technology Education, as adopted on June 16, 2016. (3-29-17)
- iv. Family and Consumer Sciences, as adopted on June 16, 2016. (3-29-17)
- v. Skilled and Technical Sciences, as adopted on June 16, 2016. (3-29-17)
- vi. Workplace Readiness, as adopted on June 16, 2016. (3-29-17)
- 02. The English Language Development (ELD) Standards.** The World-Class Instructional Design and Assessment (WIDA) 2012 English Language Development (ELD) Standards as adopted by the State Board of Education on August 16, 2012. Copies of the document can be found on the WIDA website at [www.wida.us/standards/eld.aspx](http://www.wida.us/standards/eld.aspx). (4-4-13)
- 03. The Limited English Proficiency Program Annual Measurable Achievement Objectives (AMAOs) and Accountability Procedures.** The Limited English Proficiency Program Annual Measurable Achievement Objectives and Accountability Procedures as adopted by the State Board of Education on November 11, 2009. Copies of the document can be found on the State Department of Education website at [www.sde.idaho.gov](http://www.sde.idaho.gov). (4-7-11)
- 04. The Idaho English Language Proficiency Assessment (IELA) Achievement Standards.** The Idaho English Language Assessment (IELA) Achievement Standards as adopted by the State Board of Education on November 11, 2009. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (4-7-11)
- 05. The Idaho Standards Achievement Tests (ISAT) Achievement Level Descriptors.** Achievement Level Descriptors as adopted by the State Board of Education on April 14, 2016. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-17)
- 06. The Idaho Extended Content Standards.** The Idaho Extended Content Standards as adopted by the State Board of Education on April 17, 2008. Copies of the document can be found at the State Board of Education website at <https://boardofed.idaho.gov>. (5-8-09)
- 07. The Idaho Alternate Assessment Achievement Standards.** Alternate Assessment Achievement Standards as adopted by the State Board of Education on May 18, 2011. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-12)
- 08. The Idaho Standards for Infants, Toddlers, Children, and Youth Who Are Deaf or Hard of Hearing.** As adopted by the State Board of Education on October 11, 2007. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (4-2-08)
- 09. The Idaho Standards for Infants, Toddlers, Children, and Youth Who Are Blind or Visually Impaired.** As adopted by the State Board of Education on October 11, 2007. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (4-2-08)
- 10. The Idaho Special Education Manual.** The Idaho Special Education Manual as adopted by the State Board of Education on ~~November 28, 2016~~ August 10, 2017. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (~~3-29-17~~)( )

## **INCORPORATION BY REFERENCE SYNOPSIS**

In compliance with Section 67-5223(4), Idaho Code, the following is a synopsis of the differences between the materials previously incorporated by reference in this rule that are currently of full force and effect and newly revised or amended versions of these same materials that are being proposed for incorporation by reference under this rulemaking.

The following agency of the state of Idaho has prepared this synopsis as part of the proposed rulemaking for the chapter cited here under the docket number specified:

**STATE BOARD AND STATE DEPARTMENT OF EDUCATION**  
**IDAPA 08.02.03 - Rules Governing Thoroughness**  
**Proposed Rulemaking - Docket No. 08-0203-1704**

The updated Manual replaces the outdated terms “deafness” and “hearing impairment” with “deaf or hard of hearing.” The definition of “deaf or hard of hearing” now includes language regarding the child’s access, comprehension, and/or use of linguistic information through hearing. In addition, state eligibility criteria for “deafness” and “hearing impairment” have been replaced by criteria for “deaf or hard of hearing.” The modified eligibility criteria, used by evaluation teams when determining the disability category for a student, compliment the updated definition of “deaf or hard of hearing.”

Other changes to the Manual include minor language corrections or deletions necessary to maintain document consistency and to align with the Every Student Succeeds Act, Idaho Code, or teacher certification standards.

Changes to the Idaho Special Education Manual include:

Acronyms and Abbreviations: Remove HOUSSE (Highly Objective Uniform State Standard of Evaluation) which is no longer applicable.

Glossary: Clarify the term “audiologist” for consistency with professional responsibilities. Replace “deafness” and “hearing impairment” with “deaf or hard of hearing.” Remove “modification” to be consistent with use of terms “accommodation” and “adaptation.”

Chapter 4: Evaluation and Eligibility: Replace “deafness” and “hearing impairment” with “deaf or hard of hearing.” Provide clarification of the Language Impairment category if a student does not qualify under the criteria for Deaf or Hard of Hearing.

Chapter 9: Private School Students: Remove terminology “or dual enrollment” to align with Idaho Code 33-203 and other areas of the manual. The term in this section of the manual was misappropriated.

Chapter 10: Improving Results: Change “Computer Based Route to Teacher Certification” to “Non-Traditional Route to Certification” to align with teacher certification standards. Remove

reference to alternative route preparation program for para-educators that is no longer available.

General: Remove references to “highly qualified” teachers to align with the Every Student Succeeds Act. Change the term “modifications” to “accommodations” or “adaptations” for consistency. Correct terminology from “specifically designed instruction” to “specially designed instruction.”

These changes will bring the Idaho Special Education Manual into compliance with the Individuals with Disabilities Education Act and align with the Every Student Succeeds Act, Idaho Code, and teacher certification standards. In addition, the proposed changes will provide clear, consistent guidance for school personnel.

# IDAPA 08 – STATE BOARD AND STATE DEPARTMENT OF EDUCATION

## 08.02.03 – RULES GOVERNING THOROUGHNESS

DOCKET NO. 08-0203-1705

### NOTICE OF RULEMAKING – PROPOSED RULE

**AUTHORITY:** In compliance with Section 67-5221(1), Idaho Code, notice is hereby given that this agency has initiated proposed rulemaking procedures. The action is authorized pursuant to Sections 33-105 and 33-1612, Idaho Code.

**PUBLIC HEARING SCHEDULE:** Public hearing(s) concerning this rulemaking will be scheduled if requested in writing by twenty-five (25) persons, a political subdivision, or an agency, not later than October 18, 2017.

The hearing site(s) will be accessible to persons with disabilities. Requests for accommodation must be made not later than five (5) days prior to the hearing, to the agency address below.

**DESCRIPTIVE SUMMARY:** The following is a nontechnical explanation of the substance and purpose of the proposed rulemaking:

Idaho Content Standards describe what Idaho students should know and be able to do at each grade level in certain content areas. These proposed rule changes reflect the standard practice and expectation that the Idaho State Department of Education (Department) convene a review committee of Idaho educators to review and make revisions when needed to the Idaho Content Standards on a rotating basis every six (6) years. This helps ensure that these standards remain the most effective and up-to-date available because they form common learning expectations. Instruction meeting these expectations as a minimum is the responsibility of each local public school district. The changes proposed in each of the content areas up for review reflect the work of the review committees with input from Idaho stakeholders.

The Idaho Content Standards reviewed include Science, Driver Education, and Information and Communication Technology. The changes in Driver Education Content Standards are few and minor, focusing on moving from a combination of alpha numeric numbering to wholly numeric numbering. Minor additions to the current standards include greater specificity in the mirror adjustment [to reduce blind spots and glare] and distracted driving sections, and new sections on rules for yielding in school zones and procedures for traffic stops by police officers. The changes in Information and Communication Technology encompass significant formatting changes, but little change in actual content.

The Science Content Standards changes are significant as they focus on students demonstrating deep knowledge of scientific principles and processes by engaging directly in ‘doing’ science. This emphasis on performance and learning by doing is a paradigm shift with direct implications for growing a scientifically literate citizenry and workforce. It also reflects the deep interest and profound concern in raising the bar in science education indicated by several years of public and legislative input. The revised standards as a foundation of an integrated educational system are the first step in a necessary and synchronous series of ongoing efforts involving professional learning for educators centered on supporting instructional shifts, curricular material review, and development of high cognitive demand, valid, and reliable assessments deeply aligned to the standards. The Idaho Legislature approved temporary Idaho Content Standards for Science in 2017 that encompassed these significant changes, with the exception of five (5) paragraphs dealing with human impacts on the environment. The Department received overwhelming public comment regarding the five (5) paragraphs, and revisions were made to address discussion of problems of human impacts and potential methods of mitigation.

The Idaho State Board of Education (Board) approved these amended content standards on August 10, 2017. The content standards incorporated by reference will reflect the August 10, 2017 Board approval date.

**FISCAL IMPACT:** The following is a specific description, if applicable, of any negative fiscal impact on the state general fund greater than ten thousand dollars (\$10,000) during the fiscal year resulting from this rulemaking: N/A

**NEGOTIATED RULEMAKING:** Pursuant to Section 67-5220(1), Idaho Code, negotiated rulemaking was conducted. The Notice of Intent to Promulgate Rules - Negotiated Rulemaking was published in the April 5, 2017 Idaho Administrative Bulletin, [Vol. 17-4, pages 36-37](#).

**INCORPORATION BY REFERENCE:** Pursuant to Section 67-5229(2)(a), Idaho Code, the following is a brief synopsis of why the materials cited are being incorporated by reference into this rule:

Because of the number of pages within the documents, republication of the Idaho Content Standards in Science, Driver Education and Information and Communication Technology would be unduly cumbersome and expensive. Complete copies of the proposed Idaho Content Standards for Science, Driver Education, and Information and Communication Technology can be found on the State Department of Education's website at <https://sde.idaho.gov/topics/admin-rules/>.

**ASSISTANCE ON TECHNICAL QUESTIONS, SUBMISSION OF WRITTEN COMMENTS:** For assistance on technical questions concerning the proposed rule, contact Scott Cook, Director of Academics, at (208) 332-6927 or [scook@sde.idaho.gov](mailto:scook@sde.idaho.gov).

Anyone may submit written comments regarding this proposed rulemaking. All written comments must be directed to the undersigned and must be delivered on or before October 25, 2017.

DATED this 10th day of August, 2017.

Sherri Ybarra  
Superintendent of Public Instruction  
650 West State Street, 2nd Floor  
P.O. Box 83720  
Boise, ID 83720-0027  
Office: (208) 332-6800  
Fax: (208) 334-2228

**THE FOLLOWING IS THE PROPOSED TEXT OF DOCKET NO. 08-0203-1705  
(Only Those Sections With Amendments Are Shown.)**

**004. INCORPORATION BY REFERENCE.**

The following documents are incorporated into this rule: (3-30-07)

**01. The Idaho Content Standards.** The Idaho Content Standards as adopted by the State Board of Education. Individual subject content standards are adopted in various years in relation to the curricular materials adoption schedule. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-10)

- a.** Arts and Humanities Categories: (3-24-17)
  - i.** Dance, as revised and adopted on August 11, 2016; (3-24-17)
  - ii.** Interdisciplinary Humanities, as revised and adopted on August 11, 2016; (3-24-17)
  - iii.** Media Arts, as adopted on August 11, 2016. (3-24-17)
  - iv.** Music, as revised and adopted on August 11, 2016; (3-24-17)
  - v.** Theater, as revised and adopted on August 11, 2016; (3-24-17)

- vi. Visual Arts, as revised and adopted on August 11, 2016; (3-24-17)
- vii. World languages, as revised and adopted on August 11, 2016. (3-24-17)
- b. Computer Science, adopted on November 28, 2016. (3-24-17)
- c. Driver Education, as revised and adopted on August ~~21, 2008~~ 10, 2017. (~~3-29-10~~)(    )
- d. English Language Arts/Literacy, as revised and adopted on November 28, 2016. (3-24-17)
- e. Health, as revised and adopted on August 11, 2016. (3-24-17)
- 2017. f. Information and Communication Technology, as revised and adopted on ~~April 22, 2010~~ August 10,  
(~~4-7-11~~)(    )
- g. Limited English Proficiency, as revised and adopted on August 21, 2008. (3-29-10)
- h. Mathematics, as revised and adopted on August 11, 2016. (3-24-17)
- i. Physical Education, as revised and adopted on August 11, 2016. (3-24-17)
- j. Science, as revised and adopted on ~~April 17, 2009~~ August 10, 2017. (~~3-29-10~~)(    )
- k. Social Studies, as revised and adopted on November 28, 2016. (3-24-17)
- l. Career Technical Education Categories: (3-29-17)
  - i. Agricultural and Natural Resources, as adopted on June 16, 2016. (3-29-17)
  - ii. Business and Marketing Education, as adopted on June 16, 2016. (3-29-17)
  - iii. Engineering and Technology Education, as adopted on June 16, 2016. (3-29-17)
  - iv. Family and Consumer Sciences, as adopted on June 16, 2016. (3-29-17)
  - v. Skilled and Technical Sciences, as adopted on June 16, 2016. (3-29-17)
  - vi. Workplace Readiness, as adopted on June 16, 2016. (3-29-17)
- 02. The English Language Development (ELD) Standards.** The World-Class Instructional Design and Assessment (WIDA) 2012 English Language Development (ELD) Standards as adopted by the State Board of Education on August 16, 2012. Copies of the document can be found on the WIDA website at [www.wida.us/standards/eld.aspx](http://www.wida.us/standards/eld.aspx). (4-4-13)
- 03. The Limited English Proficiency Program Annual Measurable Achievement Objectives (AMAOs) and Accountability Procedures.** The Limited English Proficiency Program Annual Measurable Achievement Objectives and Accountability Procedures as adopted by the State Board of Education on November 11, 2009. Copies of the document can be found on the State Department of Education website at [www.sde.idaho.gov](http://www.sde.idaho.gov). (4-7-11)
- 04. The Idaho English Language Proficiency Assessment (IELA) Achievement Standards.** The Idaho English Language Assessment (IELA) Achievement Standards as adopted by the State Board of Education on November 11, 2009. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (4-7-11)
- 05. The Idaho Standards Achievement Tests (ISAT) Achievement Level Descriptors.** Achievement Level Descriptors as adopted by the State Board of Education on April 14, 2016. Copies of the document can be



found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-17)

**06. The Idaho Extended Content Standards.** The Idaho Extended Content Standards as adopted by the State Board of Education on April 17, 2008. Copies of the document can be found at the State Board of Education website at <https://boardofed.idaho.gov>. (5-8-09)

**07. The Idaho Alternate Assessment Achievement Standards.** Alternate Assessment Achievement Standards as adopted by the State Board of Education on May 18, 2011. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-12)

**08. The Idaho Standards for Infants, Toddlers, Children, and Youth Who Are Deaf or Hard of Hearing.** As adopted by the State Board of Education on October 11, 2007. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (4-2-08)

**09. The Idaho Standards for Infants, Toddlers, Children, and Youth Who Are Blind or Visually Impaired.** As adopted by the State Board of Education on October 11, 2007. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (4-2-08)

**10. The Idaho Special Education Manual.** The Idaho Special Education Manual as adopted by the State Board of Education on November 28, 2016. Copies of the document can be found on the State Board of Education website at <https://boardofed.idaho.gov>. (3-29-17)

## **INCORPORATION BY REFERENCE SYNOPSIS**

In compliance with Section 67-5223(4), Idaho Code, the following is a synopsis of the differences between the materials previously incorporated by reference in this rule that are currently of full force and effect and newly revised or amended versions of these same materials that are being proposed for incorporation by reference under this rulemaking.

The following agency of the state of Idaho has prepared this synopsis as part of the proposed rulemaking for the chapter cited here under the docket number specified:

**STATE BOARD AND STATE DEPARTMENT OF EDUCATION**  
***IDAPA 08.02.03 - Rules Governing Thoroughness***  
***Proposed Rulemaking - Docket No. 08-0203-1705***

Docket No. 08-0203-1705 contains revised Idaho Content Standards in three areas: Driver Education, Information and Communication Technology, and Science. While changes in Driver Education and Information and Communication Technology Content Standards are relatively minor, the shift in Science Content Standards is significant as it focuses on students' demonstration of deep knowledge of scientific principles and processes by engaging directly in 'doing' science. This emphasis on performance and learning by doing is a paradigm shift with direct implications for growing a scientifically literate citizenry and workforce. It also reflects the deep interest and profound concern in raising the bar for science education as indicated by several years of public and legislative input. The current standards first adopted nearly 20 years ago tended to be general and broad, providing little provision and expectation that students demonstrate knowledge of science and scientific principles by actually engaging in science. Thus, there is currently a dearth of guidance for teaching and learning for teachers and students. The Science crosswalk guidance document (Appendix A) demonstrates where concepts found in the standards approved by the Idaho Legislature in 2010 can be found in the revised standards. These revised content standards act as a foundation for an integrated educational system, the first step in a necessary and synchronous series of ongoing efforts involving professional learning for educators centered on supporting instructional shifts, curricular material review, and development of high cognitive demand, valid and reliable assessments deeply aligned to the standards.

The changes in Driver Education Content Standards are few and minor, focusing on moving from a combination of alpha numeric numbering to wholly numeric numbering. Minor additions to the current standards include greater specificity in the mirror adjustment [to reduce blind spots and glare] and distracted driving sections, and new sections on rules for yielding in school zones and procedures for traffic stops by police officers.

Finally, the changes in Information and Communication Technology encompass significant formatting changes, but little change in actual content. The accompanying crosswalk document (Appendix B) delineates these formatting changes centered on showing how the concepts in the current standards found in five standards are now in the revised set of content standards distributed amongst seven standards.

## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
Kindergarten	Physical Science	Motion: Forces and Interactions	PS1-K-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	1.S.2.2.1 Describe the position and motion of objects. (ex. revolve, rotate, at rest, float, and fall)	K.S.1.2.1 Make observations and collect data  K.S.1.3.1 Measure in non-standard units  K.S.1.4.1 Apply the concepts of yesterday, today, and tomorrow.  K.S.1.6.1 Make observations.
Kindergarten	Physical Science	Motion: Forces and Interactions	PS1-K-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.		
Kindergarten	Physical Science	Energy	PS2-K-1. Make observations to determine the effect of sunlight on Earth's surface.		
Kindergarten	Physical Science	Energy	PS2-K-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.		
Kindergarten	Life Science	Molecules to Organisms	LS1-K-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.	K.S.3.1.1 Observe and describe the characteristics of plants and animals.	K.S.1.7.1 Use cooperation and interaction skills
Kindergarten	Life Science	Molecules to Organisms		1.S.3.2.1 State that living things need food to survive.	
Kindergarten	Life Science	Molecules to Organisms	LS1-K-2. Use classification supported by evidence to differentiate between living and non-living items.	K.S.3.2.1 Describe the difference between living and non-living things.	K.S.1.8.1 Follow instructions.
Kindergarten	Earth and Space Science	Earth's Systems	ESS1-K-1. Use and share observations of local weather conditions to describe patterns over time, which includes the 4 seasons.	K.S.4.1.1 Name the four seasons.	
Kindergarten	Earth and Space Science	Earth's Svstems		K.S.4.1.2 Place the four seasons in order.	
Kindergarten	Earth and Space Science	Earth's Systems		1.S.4.1.1 Identify the four seasons and their characteristics for a local region	

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Kindergarten	Earth and Space Science	Earth's Systems	ESS1-K-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.		
Kindergarten	Earth and Space Science	Earth and Human Activity	ESS2-K-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.	K.S.5.1.1 Describe characteristics of a man-made environment (home, school).	
Kindergarten	Earth and Space Science	Earth and Human Activity	ESS2-K-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.		
Kindergarten	Earth and Space Science	Earth and Human Activity	ESS2-K-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.		
1st Grade	Physical Science	Waves	PS1-1-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.		1.S.1.2.1 Make observations, collect data, and use data
1st Grade	Physical Science	Waves	PS1-1-2. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.		1.S.1.3.1 Measure in both standard and non-standard units.
1st Grade	Physical Science	Waves	PS1-1-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.		1.S.1.4.1 Explain the concepts of past, present, and future.
1st Grade	Physical Science	Waves	PS1-1-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.		1.S.1.6.1 Make and record observations.

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## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
1st Grade	Life Science	Molecules to Organisms	LS1-1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.		1.S.1.7.1 Demonstrate cooperation and interaction skills
1st Grade	Life Science	Molecules to Organisms	LS1-1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.		1.S.1.8.1 Follow multi-step instructions
1st Grade	Life Science	Molecules to Organisms	LS1-1-3. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	1.S.3.1.1 Describe the life cycle of a plant (seed, growth, reproduction, death).	
1st Grade	Life Science	Molecules to Organisms		1.S.3.1.2 Describe the life cycle of an animal (birth, development, reproduction, death).	
1st Grade	Life Science	Heredity	LS2-1-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.		
1st Grade	Earth and Space Science	Earth's Place in the Universe	ESS1-1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted.		
1st Grade	Earth and Space Science	Earth's Place in the Universe	ESS1-1-2. Make observations at different times of year to relate the amount of daylight to the time of year.		
2nd Grade	Physical Science	Matter and its Interactions	PS1-2-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	K.S.2.1.1 Use senses to describe matter	2.S.1.2.1 Make observations, record and interpret data.
2nd Grade	Physical Science	Matter and its Interactions		1.S.2.1.1 Describe properties of objects	2.S.1.3.1 Measure in standard and non-standard units.

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## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
2nd Grade	Physical Science	Matter and its Interactions		2.S.2.1.1 List properties of an object	2.S.1.4.1 Apply the concepts of past, present, and future
2nd Grade	Physical Science	Matter and its Interactions	PS1-2-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.		2.S.1.5.1 Identify shape and use of objects.
2nd Grade	Physical Science	Matter and its Interactions	PS1-2-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.		2.S.1.6.1 Identify questions to be investigated.
2nd Grade	Physical Science	Matter and its Interactions	PS1-2-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.		2.S.1.6.2 Make observations.
2nd Grade	Life Science	Ecosystems	LS1-2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.		2.S.1.6.3 Analyze information and evidence
2nd Grade	Life Science	Ecosystems	LS1-2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.		2.S.1.6.4 Communicate observations.
2nd Grade	Life Science	Biological Adaptation	LS2-2-1. Make observations of plants and animals to compare the diversity of life in different habitats.	1.S.5.1.1 Identify the characteristics of local natural environments.(playground, backyard).	2.S.1.7.1 Practice cooperation and interaction skills.
2nd Grade	Life Science	Biological Adaptation		2.S.3.2.1 Identify four basic needs of all living things (food, shelter, water, space).	2.S.1.8.1 Follow multi-step instructions.

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<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
2nd Grade	Life Science	Biological Adaptation		2.S.3.2.2 Discuss how animals are suited to live in different habitats.	2.S.5.2.1 Identify tools people have invented for everyday life and for scientific investigations.
2nd Grade	Life Science	Biological Adaptation		2.S.5.1.1 Compare and contrast manmade and natural environments.	
2nd Grade	Life Science	Biological Adaptation		3.S.3.1.1 Describe the adaptations of plants and animals to their environment	
2nd Grade	Earth and Space Science	Earth's Place in the Universe	ESS1-2-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.		
2nd Grade	Earth and Space Science	Earth's Systems	ESS2-2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.		
2nd Grade	Earth and Space Science	Earth's Systems	ESS2-2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.		
2nd Grade	Earth and Space Science	Earth's Systems	ESS2-2-3. Obtain information to identify where water is found on Earth and that it can be solid, liquid or gas.		
3rd Grade	Physical Science	Motion: Forces and Interactions	PS1-3-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	2.S.2.2.1 Explain how force affects the position and motion of objects.	3.S.1.1.1 Label the parts of a system
3rd Grade	Physical Science	Motion: Forces and Interactions	PS1-3-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.		3.S.1.2.1 Make observations, collect data and evaluate it

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## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
3rd Grade	Physical Science	Motion: Forces and Interactions	PS1-3-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.		3.S.1.2.2 Replicate and/or use models
3rd Grade	Physical Science	Motion: Forces and Interactions	PS1-3-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.		3.S.1.3.1 Measure changes that occur.
3rd Grade	Life Science	Ecosystems	LS1-3-1. Construct an argument that some animals form groups that help members survive		3.S.1.3.2 Measure in both U.S. Customary and International System of Measurement (metric system) units
3rd Grade	Life Science	Heredity	LS2-3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	5.S.3.3.2 Explain the concept that traits are passed from parents to offspring.	3.S.1.5.1 Describe the relationship between shape and use
3rd Grade	Life Science	Heredity	LS2-3-2. Use evidence to support the explanation that traits can be influenced by the environment.		3.S.1.6.1 Identify questions that can be answered by conducting scientific tests.
3rd Grade	Earth and Space Science	Earth's Systems	ESS1-3-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	2.S.4.1.1 Describe the characteristics of different weather conditions.	3.S.1.6.2 Conduct scientific tests
3rd Grade	Earth and Space Science	Earth's Systems	ESS1-3-2. Obtain and combine information to describe climates in different regions of the world.		3.S.1.6.3 Use appropriate tools and techniques to gather and display data.
3rd Grade	Earth and Space Science	Earth and Human Activity	ESS2-3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.		3.S.1.6.4 Use data to construct a reasonable explanation.
3rd Grade	Earth and Space Science	Earth and Human Activity			3.S.1.6.5 Make simple predictions based on data

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## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
3rd Grade	Earth and Space Science	Earth and Human Activity			3.S.1.6.6 Identify logical alternative explanations.
3rd Grade	Earth and Space Science	Earth and Human Activity			3.S.1.6.7 Communicate the results of tests to others.
3rd Grade	Earth and Space Science	Earth and Human Activity			3.S.1.8.1 Read and give multi-step instructions
3rd Grade	Earth and Space Science	Earth and Human Activity			3.S.2.1.1 Use instruments to measure properties.
3rd Grade	Earth and Space Science	Earth and Human Activity			3.S.5.2.1 Describe how technology helps develop tools.
3rd Grade	Earth and Space Science	Earth and Human Activity			3.S.5.2.2 Describe the development of tools over time
4th Grade	Physical Science	Energy	PS1-4-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.	3.S.2.3.1 Identify potential and kinetic energy	4.S.1.1.1 Explain that a system consists of an organized group of related objects that form a whole.
4th Grade	Physical Science	Energy	PS1-4-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.		4.S.1.2.1 Make and record observations then analyze and communicate the collected data.
4th Grade	Physical Science	Energy	PS1-4-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.		4.S.1.2.2 Define observations and inferences.
4th Grade	Physical Science	Energy	PS1-4-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.		4.S.1.2.3 Make, describe and/or use models.
4th Grade	Physical Science	Waves	PS2-4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.		4.S.1.3.1 Describe how changes occur and can be measured.

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## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>						
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>	
4th Grade	Physical Science	Waves	PS2-4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.		4.S.1.3.2 Measure in both U.S. Customary and International System of Measurement (metric system) units.	
4th Grade	Physical Science	Waves	PS2-4-3. Generate and compare multiple solutions that use patterns to transfer information.		4.S.1.5.1 Explain the relationship between shape and use.	
4th Grade	Life Science	Molecules to Organisms	LS1-4-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	4.S.3.1.2 Describe the difference between vertebrate and invertebrate animals	4.S.1.6.1 Write questions that can be answered by conducting scientific tests.	
4th Grade	Life Science	Molecules to Organisms		4.S.3.1.3 Classify the five groups of vertebrates (mammal, reptiles, amphibians, birds, and fish) based on characteristics.		
4th Grade	Life Science	Molecules to Organisms	LS1-4-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.			4.S.1.6.2 Conduct scientific tests.
4th Grade	Life Science	Ecosystems	LS2-4-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	3.S.3.2.3 Label a food chain that shows how organisms cooperate and compete in an ecosystem.		4.S.1.6.3 Use appropriate tools and techniques to gather and display data.
4th Grade	Life Science	Ecosystems		3.S.3.2.4 Diagram the food web and explain how organisms both cooperate and compete in ecosystems		4.S.1.6.4 Use data to construct a reasonable explanation.
4th Grade	Earth and Space Science	Earth's Place in the Universe	ESS1-4-1. Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.			4.S.1.6.5 Make predictions based on data.

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<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
4th Grade	Earth and Space Science	Earth's Systems	ESS2-4-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.		4.S.1.6.6 Analyze alternative explanations.
4th Grade	Earth and Space Science	Earth's Systems	ESS2-4-2. Analyze and interpret data from maps to describe patterns of Earth's features.		4.S.1.6.7 Communicate the results of tests to others in multiple formats
4th Grade	Earth and Space Science	Earth and Human Activity	ESS3-4-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	5.S.5.3.1 Identify the differences between renewable and nonrenewable resources.	4.S.1.8.1 Analyze and follow multistep instructions.
4th Grade	Earth and Space Science	Earth and Human Activity	ESS3-4-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	3.S.5.1.1 Identify local environmental issues	4.S.2.1.1 Use instruments to measure properties
4th Grade	Earth and Space Science	Earth and Human Activity		3.S.5.3.1 Explain the concept of recycling	4.S.5.2.1 Identify tools used for space exploration and for scientific investigations
5th Grade	Physical Science	Matter and its Interactions	PS1-5-1. Develop a model to describe that matter is made of particles too small to be seen.	5.S.2.1.1 Describe the differences among elements, compounds, and mixtures.	5.S.1.1.1 Compare and contrast different systems.
5th Grade	Physical Science	Matter and its Interactions	PS1-5-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	4.S.2.1.3 Explain the changes caused by heating and cooling materials.	5.S.1.2.1 Use observations and data as evidence on which to base scientific explanations and predictions.
5th Grade	Physical Science	Matter and its Interactions	PS1-5-3. Make observations and measurements to identify materials based on their properties.	4.S.2.1.2 Describe the physical properties of solids, liquids, and gases.	5.S.1.2.2 Explain the difference between observation and inference.
5th Grade	Physical Science	Matter and its Interactions		5.S.2.1.2 Compare the physical differences among solids, liquids and gases.	

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5th Grade	Physical Science	Matter and its Interactions	PS1-5-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	5.S.2.1.3 Explain the nature of physical change and how it relates to physical properties.	5.S.1.2.3 Use models to explain or demonstrate a concept.
5th Grade	Physical Science	Motion: Forces and Interactions	PS2-5-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.		5.S.1.3.1 Analyze changes that occur in and among systems.
5th Grade	Physical Science	Energy	PS3-5-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	3.S.3.2.1 Describe the energy needed for living systems to survive.	5.S.1.3.2 Measure in both U.S. Customary and International System of Measurement (metric system) units with an emphasis on the metric system.
5th Grade	Physical Science	Energy		3.S.3.2.2 Compare and contrast the energy requirements of plants and animals.	
5th Grade	Life Science	Molecules to Organisms	LS1-5-1. Support an argument that plants get the materials they need for growth chiefly from air and water.	5.S.3.2.1 Communicate how plants convert energy from the Sun through photosynthesis.	5.S.1.5.1 Explain how the shape or form of an object or system is frequently related to its use or function.
5th Grade	Life Science	Biological Adaptation	LS2-5-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.		5.S.1.6.1 Write and analyze questions that can be answered by conducting scientific experiments.
5th Grade	Life Science	Biological Adaptation	LS2-5-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.		5.S.1.6.2 Conduct scientific investigations using a control and a variable.
5th Grade	Life Science	Biological Adaptation	LS2-5-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	4.S.3.1.1 Analyze and communicate the adaptations of plants and animals to their environment.	5.S.1.6.3 Select and use appropriate tools and techniques to gather and display data.

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5th Grade	Life Science	Biological Adaptation	LS2-5-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.		5.S.1.6.4 Use evidence to analyze descriptions, explanations, predictions, and models.
5th Grade	Earth and Space Science	Earth's Place in the Universe	ESS1-5-1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.		5.S.1.6.5 State a hypothesis based on observations.
5th Grade	Earth and Space Science	Earth's Place in the Universe	ESS1-5-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	3.S.4.1.1 Explain the reasons for length of a day, the seasons, and the year on Earth.	5.S.1.6.6 Compare alternative explanations and predictions.
5th Grade	Earth and Space Science	Earth's Systems	ESS2-5-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	5.S.4.1.1 Describe the interactions among the solid earth, oceans and atmosphere (erosion, climate, tectonics and continental drift).	5.S.1.6.7 Communicate scientific procedures and explanations.
5th Grade	Earth and Space Science	Earth's Systems	ESS2-5-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.		5.S.1.8.1 Read and follow technical instructions.
5th Grade	Earth and Space Science	Earth and Human Activity	ESS3-5-1. Support Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	5.S.5.1.1 Identify issues for environmental studies.	5.S.5.2.1 Describe how science and technology are part of a student's life.
5th Grade	Earth and Space Science	Earth and Human Activity			5.S.5.2.2 List examples of science and technology.

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Middle School (6-8)	Physical Science	Matter and its Interactions	PS1-MS-1. Develop models to describe the atomic composition of simple molecules and extended structures.	6.S.2.1.1* Compare and contrast the differences among elements, compounds, and mixtures.	7.S.1.1.1 Define small systems as a part of a whole system.  7.S.1.1.2 Determine how small systems contribute to the function of the whole.  7.S.1.1.3 Identify the different structural levels of an organism (cells, tissues, organs, and organ systems).  7.S.1.2.1 Describe how observations and data are evidence on which to base scientific explanations and predictions .  7.S.1.2.2 Use observations to make defensible inferences.  7.S.1.2.3 Use models to explain or demonstrate a concept.  7.S.1.3.1 Identify concepts of science that have been stable over time.
Middle School (6-8)	Physical Science	Matter and its Interactions			
Middle School (6-8)	Physical Science	Matter and its Interactions	PS1-MS-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.		
Middle School (6-8)	Physical Science	Matter and its Interactions	PS1-MS-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.		
Middle School (6-8)	Physical Science	Matter and its Interactions	PS1-MS-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	6.S.2.1.3* Compare densities of equal volumes of a solid, a liquid, or a gas.	
Middle School (6-8)	Physical Science	Matter and its Interactions			
Middle School (6-8)	Physical Science	Matter and its Interactions		6.S.2.1.5* Explain the nature of physical change and how it relates to physical properties (the distance between molecules as water changes from ice to liquid water and to	

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Middle School (6-8)	Physical Science	Matter and its Interactions		3.S.2.1.2 Identify the physical properties of solids, liquids, and gases.	7.S.1.3.2 Recognize changes that occur within systems.  7.S.1.3.3 Make metric measurements using appropriate tools.  7.S.1.6.1 Identify controls and variables used in scientific investigations.  7.S.1.6.2 Use appropriate tools and techniques to gather and display data.  7.S.1.6.3 Evaluate data in order to form conclusions.  7.S.1.6.4 Use evidence and critical thinking to accept or reject a hypothesis.  7.S.1.6.5 Evaluate alternative explanations or predictions.  7.S.1.6.6 Communicate and defend scientific procedures and explanations.
Middle School (6-8)	Physical Science	Matter and its Interactions		3.S.2.1.3 Explain that heating and cooling can cause changes of state in common materials	
Middle School (6-8)	Physical Science	Matter and its Interactions	PS1-MS-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.		
Middle School (6-8)	Physical Science	Matter and its Interactions	PS1-MS-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.		
Middle School (6-8)	Physical Science	Motion: Forces and Interactions	PS2-MS-1. Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.		
Middle School (6-8)	Physical Science	Motion: Forces and Interactions	PS2-MS-2. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.		
Middle School (6-8)	Physical Science	Motion: Forces and Interactions	PS2-MS-3. Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	8-9.PS.2.4.5 Describe the relationships between electricity and magnetism.	
Middle School (6-8)	Physical Science	Motion: Forces and Interactions	PS2-MS-4. Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	6.S.2.2.1* Describe the effects of different forces (gravity and friction) on the movement, speed, and direction of an object.	

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Middle School (6-8)	Physical Science	Motion: Forces and Interactions	PS2-MS-5. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.		7.S.1.8.1 Read and evaluate technical instructions.  7.S.5.2.1 Explain how science and technology are interrelated.
Middle School (6-8)	Physical Science	Energy	PS3-MS-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.		
Middle School (6-8)	Physical Science	Energy	PS3-MS-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.		7.S.5.2.2 Explain how science advances technology.
Middle School (6-8)	Physical Science	Energy	PS3-MS-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.		
Middle School (6-8)	Physical Science	Energy	PS3-MS-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.		
Middle School (6-8)	Physical Science	Energy	PS3-MS-5. Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.		

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Middle School (6-8)	Physical Science	Waves	PS4-MS-1. Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.		
Middle School (6-8)	Physical Science	Waves	PS4-MS-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.		
Middle School (6-8)	Physical Science	Waves	PS4-MS-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.		
Middle School (6-8)	Life Science	Molecules to Organisms	LS1-MS-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	5.S.3.3.1 Compare and contrast the structural differences between plant and animal cells.	
Middle School (6-8)	Life Science	Molecules to Organisms	LS1-MS-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	7.S.3.3.3 Identify the functions of cell structures.	
Middle School (6-8)	Life Science	Molecules to Organisms	LS1-MS-3. Use argument supported by evidence for how a living organism is a system of interacting subsystems composed of groups of cells.	7.S.3.3.1 Explain the relationships among specialized cells, tissues, organs, organ systems, and organisms.	
Middle School (6-8)	Life Science	Molecules to Organisms		7.S.3.3.2 Identify the parts of specialized plant and animal cells.	
Middle School (6-8)	Life Science	Molecules to Organisms	LS1-MS-4. Construct a scientific argument based on evidence to defend a claim of life for a specific object or organism.		

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Middle School (6-8)	Life Science	Molecules to Organisms	LS1-MS-5. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	7.S.3.2.1 Describe how energy stored in food is primarily derived from the Sun through photosynthesis.	
Middle School (6-8)	Life Science	Molecules to Organisms	LS1-MS-6. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism	7.S.3.3.4 Describe cell functions that involve chemical reactions.	
Middle School (6-8)	Life Science	Ecosystems	LS2-MS-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	7.S.3.2.2 Describe how the availability of resources (matter and energy) limits the distribution and abundance of organisms.	
Middle School (6-8)	Life Science	Ecosystems	LS2-MS-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.		
Middle School (6-8)	Life Science	Ecosystems	LS2-MS-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	7.S.3.2.3 Illustrate how atoms and molecules cycle among the living and nonliving components of the biosphere.	
Middle School (6-8)	Life Science	Ecosystems	LS2-MS-4. Develop a model to describe the flow of energy through the trophic levels of an ecosystem.	7.S.3.2.4 Identify how energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores, carnivores, and decomposers.	
Middle School (6-8)	Life Science	Ecosystems	LS2-MS-5. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		

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Middle School (6-8)	Life Science	Ecosystems	LS2-MS-6. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.		
Middle School (6-8)	Life Science	Heredity	LS3-MS-1. Develop and use a model to describe why mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism.		
Middle School (6-8)	Life Science	Heredity	LS3-MS-2. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	7.S.3.3.5 Describe how dominant and recessive traits are inherited.	
Middle School (6-8)	Life Science	Biological Adaptation	LS4-MS-1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.		
Middle School (6-8)	Life Science	Biological Adaptation	LS4-MS-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer relationships.		
Middle School (6-8)	Life Science	Biological Adaptation	LS4-MS-3. Analyze displays of pictorial data to compare patterns of similarities in the anatomical structures across multiple species of similar classification levels to identify relationships.		
Middle School (6-8)	Life Science	Biological Adaptation	LS4-MS-4. Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.		

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Middle School (6-8)	Life Science	Biological Adaptation	LS4-MS-5. Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.		
Middle School (6-8)	Life Science	Biological Adaptation	LS4-MS-6. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	7.S.3.1.1 Describe how natural selection explains species change over time.	
Middle School (6-8)	Earth and Space Science	Earth's Place in the Universe	ESS1-MS-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.		
Middle School (6-8)	Earth and Space Science	Earth's Place in the Universe	ESS1-MS-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	8-9.ES.4.1.1* Explain the current scientific theory that suggests that the solar system formed from a nebular cloud of dust and gas.	
Middle School (6-8)	Earth and Space Science	Earth's Place in the Universe		4.S.4.1.2 Explain the effect of gravity on orbits and objects.	
Middle School (6-8)	Earth and Space Science	Earth's Place in the Universe		4.S.4.1.3 Explain the effect of moon's gravity on Earth's tides.	
Middle School (6-8)	Earth and Space Science	Earth's Place in the Universe	ESS1-MS-3. Analyze and interpret data to determine scale properties of objects in the solar system.	4.S.4.1.1 Compare and contrast the basic components of our solar system (planets, sun, moon, asteroids, comets, meteors).	
Middle School (6-8)	Earth and Space Science	Earth's Place in the Universe	ESS1-MS-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's history.	8-9.ES.4.1.2* Identify methods used to estimate geologic time.	

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Middle School (6-8)	Earth and Space Science	Earth's Systems	ESS2-MS-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	6.S.4.1.1* Explain the interactions among the solid earth, oceans, atmosphere, and organisms.	
Middle School (6-8)	Earth and Space Science	Earth's Systems		5.S.4.2.1 Explain the rock cycle and identify the three classifications of rocks.	
Middle School (6-8)	Earth and Space Science	Earth's Systems	ESS2-MS-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	8-9.ES.4.1.3* Show how interactions among solid earth, oceans, atmosphere, and organisms have changed the earth system over time.	
Middle School (6-8)	Earth and Space Science	Earth's Systems	ESS2-MS-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.		
Middle School (6-8)	Earth and Space Science	Earth's Systems	ESS2-MS-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	6.S.4.1.2* Explain the water cycle and its relationship to weather and climate.	
Middle School (6-8)	Earth and Space Science	Earth's Systems	ESS2-MS-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	6 S.4.1.3* Identify cumulus, cirrus, and stratus clouds and how they relate to weather changes.	
Middle School (6-8)	Earth and Space Science	Earth's Systems	ESS2-MS-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.		

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Middle School (6-8)	Earth and Space Science	Earth and Human Activity	ESS3-MS-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.		
Middle School (6-8)	Earth and Space Science	Earth and Human Activity	ESS3-MS-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.		
Middle School (6-8)	Earth and Space Science	Earth and Human Activity	ESS3-MS-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	9-10.B.5.1.1 Analyze environmental issues such as water and air quality, hazardous waste, forest health, and agricultural production.	
Middle School (6-8)	Earth and Space Science	Earth and Human Activity	ESS3-MS-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	7.S.5.3.1 Identify alternative sources of energy.	
Middle School (6-8)	Earth and Space Science	Earth and Human Activity		9-10.B.5.3.1 Describe the difference between renewable and nonrenewable resources.	
Middle School (6-8)	Earth and Space Science	Earth and Human Activity	ESS3-MS-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.		

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High School	Life Science (Biology)	Molecules to Organisms	LS1-HS-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.	9-10.B.3.3.2 Explain cell functions involving chemical reactions.	9-10.B.1.1.1 Explain the scientific meaning of system, order, and organization.
High School	Life Science (Biology)	Molecules to Organisms	LS1-HS-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	9-10.B.3.3.1 Identify the particular structures that underlie the cellular functions.	9-10.B.1.1.2 Apply the concepts of order and organization to a given system.
High School	Life Science (Biology)	Molecules to Organisms	LS1-HS-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.		9-10.B.1.2.1 Use observations and data as evidence on which to base scientific explanations.
High School	Life Science (Biology)	Molecules to Organisms	LS1-HS-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	9-10.B.3.3.3 Explain how cells use DNA to store and use information for cell functions.	9-10.B.1.2.2 Develop models to explain concepts or systems.
High School	Life Science (Biology)	Molecules to Organisms	LS1-HS-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.		9-10.B.1.2.3 Develop scientific explanations based on knowledge, logic and analysis.
High School	Life Science (Biology)	Molecules to Organisms	LS1-HS-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.		9-10.B.1.3.1 Measure changes that can occur in and among systems.
High School	Life Science (Biology)	Molecules to Organisms	LS1-HS-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.	9-10.B.3.2.4 Describe cellular respiration and the synthesis of macromolecules.	9-10.B.1.3.2 Analyze changes that can occur in and among systems.

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High School	Life Science (Biology)	Ecosystems	LS2-HS- 1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.		9 -10.B.1.3.3 Measure and calculate using the metric system.
High School	Life Science (Biology)	Ecosystems	LS2-HS-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.		9-10.B.1.6.1 Identify questions and concepts that guide scientific investigations.
High School	Life Science (Biology)	Ecosystems	LS2-HS-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.		9-10.B.1.6.2 Utilize the components of scientific problem solving to design, conduct, and communicate results of investigations.
High School	Life Science (Biology)	Ecosystems	LS2-HS-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.	9-10.B.3.2.1 Explain how matter tends toward more disorganized states (entropy).	9-10.B.1.6.3 Use appropriate technology and mathematics to make investigations.
High School	Life Science (Biology)	Ecosystems		9-10.B.3.2.2 Explain how organisms use the continuous input of energy and matter to maintain their chemical and physical organization.	9-10.B.1.6.4 Formulate scientific explanations and models using logic and evidence.
High School	Life Science (Biology)	Ecosystems	LS2-HS-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	9-10.B.3.2.3 Show how the energy for life is primarily derived from the Sun through photosynthesis.	9-10.B.1.6.5 Analyze alternative explanations and models.
High School	Life Science (Biology)	Ecosystems		9-10.B.3.2.5 Show how matter cycles and energy flows through the different levels of organization of living systems (cells, organs, organisms, communities and their environment).	9-10.B.1.6.6 Communicate and defend a scientific argument.

\*\* Now embedded in scientific and engineering practices required to complete Performance Expectations

## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
High School	Life Science (Biology)	Ecosystems	LS2-HS-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.		9-10.B.1.6.7 Explain the differences among observations, hypotheses, and theories.
High School	Life Science (Biology)	Ecosystems	LS2-HS-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.		9-10.B.1.8.1 Analyze technical writing, graphs, charts, and diagrams.
High School	Life Science (Biology)	Ecosystems	LS2-HS-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.		9-10.B.5.2.1 Explain how science advances technology.
High School	Life Science (Biology)	Heredity	LS3-HS- 1. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.	9-10.B.3.3.4 Explain how selective expression of genes can produce specialized cells from a single cell.	9-10.B.5.2.2 Explain how technology advances science.
High School	Life Science (Biology)	Heredity	LS3-HS-2. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.		9-10.B.5.2.3 Explain how science and technology are pursued for different purposes.
High School	Life Science (Biology)	Heredity	LS3-HS-3. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.		
High School	Life Science (Biology)	Biological Adaptation	LS4-HS- 1. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.		

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## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
High School	Life Science (Biology)	Biological Adaptation	LS4-HS-2. Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	9-10.B.3.1.2 Explain how evolution is the consequence of interactions among the potential of a species to increase its numbers, genetic variability, a finite supply of resources, and the selection by the environment of those offspring better able to survive and reproduce.	
High School	Life Science (Biology)	Biological Adaptation	LS4-HS-3. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.		
High School	Life Science (Biology)	Biological Adaptation	LS4-HS-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	9-10.B.3.1.1 Use the theory of evolution to explain how species change over time.	
High School	Life Science (Biology)	Biological Adaptation	LS4-HS-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.		
High School	Life Science (Biology)	Biological Adaptation	LS4-HS-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.		
High School	Physical Science Chemistry	Structure and Properties of Matter	PSC1-HS-1. Develop models to describe the atomic composition of simple molecules and extended structures.		

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Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
High School	Physical Science Chemistry	Structure and Properties of Matter	PSC1-HS-2. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.	8-9.PS.2.4.1 Describe the properties, function, and location of protons, neutrons, and electrons.	
High School	Physical Science Chemistry	Structure and Properties of Matter	PSC1-HS-3. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.	8-9.PS.2.4.4 State the basic electrical properties of matter.	
High School	Physical Science Chemistry	Structure and Properties of Matter	PSC1-HS-4. Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and other types of radioactive decay.	8-9 PS.2.4.2. Explain the processes of fission and fusion.	
High School	Physical Science Chemistry	Structure and Properties of Matter		8-9.PS.2.4.3 Describe the characteristics of isotopes.	
High School	Physical Science Chemistry	Structure and Properties of Matter	PSC1-HS-5. Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.		
High School	Physical Science Chemistry	Chemical Reactions	PSC2-HS-1 Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.		

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Appendix A

Crosswalk from Revised to Current Idaho Content Standards in Science					
Grade Level	Proposed Idaho Science	Unit	Performance Standards	2007/2010 Science Standard	2007/2010 Nature of Science Standards**
High School	Physical Science Chemistry	Chemical Reactions	PSC2-HS-2. Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.	8-9.PS.2.5.1 Explain how chemical reactions release or consume energy while the quantity of matter remains constant.	
High School	Physical Science Chemistry	Chemical Reactions	PSC2-HS-3. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.		
High School	Physical Science Chemistry	Chemical Reactions	PSC2-HS-4. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.		
High School	Physical Science Chemistry	Chemical Reactions	PSC2-HS-5. Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.		
High School	Physical Science Chemistry	Energy	PSC3-HS-1. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.		
High School	Physical Science Chemistry	Energy	PSC3-HS-2 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.		

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Appendix A

Crosswalk from Revised to Current Idaho Content Standards in Science					
Grade Level	Proposed Idaho Science	Unit	Performance Standards	2007/2010 Science Standard	2007/2010 Nature of Science Standards**
High School	Physical Science Chemistry	Energy	PSC3-HS-3. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).		
High School	Physical Science Chemistry	Energy	PSC3-HS-4*. Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. ---OPTIONAL		
High School	Physical Science Chemistry	Energy	PSC3-HS-5. Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).		
High School	Physical Science Physics	Motion: Forces and Interactions	PSP1-HS-1. Analyze data to support the claim that Newton’s second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.	8-9*.PS.2.2.1 Explain motion using Newton’s Laws of Motion.	
High School	Physical Science Physics	Motion: Forces and Interactions	PSP1-HS-2. Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.		

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Crosswalk from Revised to Current Idaho Content Standards in Science					
Grade Level	Proposed Idaho Science	Unit	Performance Standards	2007/2010 Science Standard	2007/2010 Nature of Science Standards**
High School	Physical Science Physics	Motion: Forces and Interactions	PSP1-HS-3. Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.		
High School	Physical Science Physics	Motion: Forces and Interactions	PSP1-HS-4. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.		
High School	Physical Science Physics	Motion: Forces and Interactions	PSP1-HS-5. Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.		
High School	Physical Science Physics	Motion: Forces and Interactions	PSP1-HS-6. Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.		
High School	Physical Science Physics	Energy	PSP2-HS-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.		
High School	Physical Science Physics	Energy	PSP2-HS-2. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).	8-9.PS.2.3.1* Explain that energy can be transformed but cannot be created nor destroyed.	

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<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
High School	Physical Science Physics	Energy	PSP2-HS-3. Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.		
High School	Physical Science Physics	Energy	PSP2-HS-4. Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).		
High School	Physical Science Physics	Energy	PSP2-HS-5. Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.		
High School	Physical Science Physics	Waves	PSP3-HS-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.		
High School	Physical Science Physics	Waves	PSP3-HS-2. Evaluate questions about the advantages of using digital transmission and storage of information.		
High School	Physical Science Physics	Waves	PSP3-HS-3. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.		

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Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
High School	Physical Science Physics	Waves	PSP3-HS-4. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.		
High School	Physical Science Physics	Waves	PSP3-HS-5. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.		
High School	Earth and Space Science	Earth's Place in the Universe	ESS1-HS-1. Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.		
High School	Earth and Space Science	Earth's Place in the Universe	ESS1-HS-2. Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.		
High School	Earth and Space Science	Earth's Place in the Universe	ESS1-HS-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.		
High School	Earth and Space Science	Earth's Place in the Universe	ESS1-HS-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.		
High School	Earth and Space Science	Earth's Place in the Universe	ESS1-HS-5. Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.		

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# Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
High School	Earth and Space Science	Earth's Place in the Universe	ESS1-HS-6. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.		
High School	Earth and Space Science	Earth's Systems	ESS2-HS-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.		
High School	Earth and Space Science	Earth's Systems	ESS2-HS2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.		
High School	Earth and Space Science	Earth's Systems	ESS2-HS-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.		
High School	Earth and Space Science	Earth's Systems	ESS2-HS-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.		
High School	Earth and Space Science	Earth's Systems	ESS2-HS-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.		
High School	Earth and Space Science	Earth's Systems	ESS2-HS-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.		
High School	Earth and Space Science	Earth's Systems	ESS2-HS-7. Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.		

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## Appendix A

<b>Crosswalk from Revised to Current Idaho Content Standards in Science</b>					
<b>Grade Level</b>	<b>Proposed Idaho Science</b>	<b>Unit</b>	<b>Performance Standards</b>	<b>2007/2010 Science Standard</b>	<b>2007/2010 Nature of Science Standards**</b>
High School	Earth and Space Science	Earth and Human Activity	ESS3-HS-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.		
High School	Earth and Space Science	Earth and Human Activity	ESS3-HS-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.		
High School	Earth and Space Science	Earth and Human Activity	ESS3-HS-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.		
High School	Earth and Space Science	Earth and Human Activity	ESS3-HS-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.	9-10.B.5.1.1 Analyze environmental issues such as water and air quality, hazardous waste, forest health, and agricultural production.	
High School	Earth and Space Science	Earth and Human Activity	ESS3-HS-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.		
High School	Earth and Space Science	Earth and Human Activity	ESS3-HS-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.		

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Appendix B

<b>Idaho Content Standards: Information and Communication Technology Crosswalk</b>							
<b>Information and Communication Technology (2017)</b>							
<b>Information and Communication Technology Standards (2010)</b>	<b>Standard 1: Empowered Learner</b>	<b>Standard 2: Digital Citizen</b>	<b>Standard 3: Knowledge Constructor</b>	<b>Standard 4: Innovative Designer</b>	<b>Standard 5: Computational Thinker</b>	<b>Standard 6: Creative Communicator</b>	<b>Standard 7: Global Collaborator</b>
<b>Standard 1: Creativity and Innovation</b>				X	X	X	
<b>Standard 2: Communication</b>	X					X	X
<b>Standard 3: Research Skills and Critical Thinking</b>			X	X	X	X	X
<b>Standard 4: Digital Citizenship</b>	X	X					
<b>Standard 5: Technology Operations &amp; Concepts</b>	X						

\*\* Now embedded in scientific and engineering practices required to complete Performance Expectations