

**Indiana Academic Standards (IAS):  
Instructional and Assessment Guidance  
ISTEP+: Science – Grades 4 & 6  
2016-17**

**Opportunity to Learn**

From an assessment perspective, preparing students necessitates a focus on “Opportunity to Learn.” Opportunity to Learn (OTL) refers to equitable conditions or circumstances within the school or classroom that promote learning for all students. OTL includes curricula, learning materials and instructional experiences. In short, OTL supports student success by ensuring student access to both content and instruction.

Opportunity to Learn is both a moral imperative and an ethical responsibility on the part of educators. Indiana teachers have a two-fold obligation with regard to OTL. First, teachers must provide students with OTL for Indiana Academic Standards that are assessed in the classroom and on ISTEP+. Second, and more importantly, teachers must provide OTL in terms of the content that students must learn in preparation for the next level of learning.

**Prioritizing Instruction**

In an effort to empower teachers and focus on instructional priorities, the Office of Student Assessment has created this Instructional and Assessment Guidance (“Guidance”) document for grades 4 and 6. The *Content Priority* of each Standard is delineated in the Guidance as one of three designations:

- 1) Critical – identified as “✓+”
- 2) Important – identified as “✓”
- 3) Additional – identified as “✓–”

The Guidance document is designed to assist teachers in planning and prioritizing instructional time to ensure student success.

All of the Indiana Academic Standards represent valuable content, and the Guidance documents are designed to assist teachers in planning and prioritizing instructional time to ensure student success.

**A Final Note**

The Guidance document, as well as the Standards themselves, are not meant to be used as a “checklist.” Rather, when teachers take into consideration the instructional priorities and deliver rich, meaningful lessons, the Standards come to life in the classroom.



**Note:** *The ISTEP+ Science assessment for Spring 2017 will be aligned to the 2010 Indiana Academic Standards for Science. Correlation guides comparing the 2010 and 2016 Indiana Academic Standards for Science can be found here: <http://www.doe.in.gov/standards/science-computer-science>. The correlation guides should be used in conjunction with the Instructional and Assessment Guidance when planning instruction for the 2016-17 school year.*

The Nature of Science and the Design Process standards can be found at the front of the 2010 Indiana Academic Standards for Science documents. The number designations of each are included below for clarification.

### **The Nature of Science**

4.5.1: Make predictions and formulate testable questions.

4.5.2: Design a fair test.

4.5.3: Plan and carry out investigations—often over a period of several lessons—as a class, in small groups or independently.

4.5.4: Perform investigations using appropriate tools and technologies that will extend the senses.

4.5.5: Use measurement skills and apply appropriate units when collecting data.

4.5.6: Test predictions with multiple trials.

4.5.7: Keep accurate records in a notebook during investigations and communicate findings to others using graphs, charts, maps and models through oral and written reports.

4.5.8: Identify simple patterns in data and propose explanations to account for the patterns.

4.5.9: Compare the results of an investigation with the prediction.

### **The Design Process**

4.6.1: Identify a need or problem to be solved.

4.6.2: Brainstorm potential solutions.

4.6.3: Document the design throughout the entire design process.

4.6.4: Select a solution to the need or problem.

4.6.5: Select the most appropriate materials to develop a solution that will meet the need.

4.6.6: Create the solution through a prototype.

4.6.7: Test and evaluate how well the solution meets the goal.

4.6.8: Evaluate and test the design using measurement.

4.6.9: Present evidence by using mathematical representations (e.g., graphs, data tables).

4.6.10: Communicate the solution (including evidence) using mathematical representations (graphs, data tables), drawings or prototypes.

4.6.11: Communicate how to improve the solution.

**Instructional and Assessment Guidance**  
**ISTEP+ Science: Grade 6**  
**2016-17**

<b>Symbol</b>	<b>Key</b>
✓+	Critical Content
✓	Important Content
✓-	Additional Content

<b>Standard 1 Physical Science</b>		<b>Standard 2 Earth Science</b>		<b>Standard 3 Life Science</b>		<b>Standard 4 Science, Engineering and Technology</b>		<b>Standard 5 The Nature of Science</b>				<b>Standard 6 The Design Process</b>	
5.1.1	✓+	5.2.1	✓+	5.3.1	✓	5.4.1	✓	5.5.1	✓-	6.5.1	✓	5.6.1	✓-
5.1.2	✓	5.2.2	✓+	5.3.2	✓	5.4.2	✓	5.5.2	✓	6.5.2	✓-	5.6.2	✓+
5.1.3	✓	5.2.3	✓+	6.3.1	✓+	5.4.3	✓-	5.5.3	✓+	6.5.3	✓+	6.6.1	✓+
5.1.4	✓-	5.2.4	✓+	6.3.2	✓	6.4.1	✓-	5.5.4	✓	6.5.4	✓	6.6.2	✓-
6.1.1	✓-	6.2.1	✓+	6.3.3	✓	6.4.2	✓	5.5.5	✓	6.5.5	✓	6.6.3	✓-
6.1.2	✓	6.2.2	✓+	6.3.4	✓+	6.4.3	✓-	5.5.6	✓-	6.5.6	✓-	6.6.4	✓
6.1.3	✓	6.2.3	✓	6.3.5	✓+					6.5.7	✓	6.6.5	✓
6.1.4	✓+	6.2.4	✓+	6.3.6	✓					6.5.8	✓	6.6.6	✓
6.1.5	✓	6.2.5	✓+							6.5.9	✓	6.6.7	✓-
6.1.6	✓+									6.5.10	✓-	6.6.8	✓-
6.1.7	✓											6.6.9	✓
												6.6.10	✓+
												6.6.11	✓
												6.6.12	✓-

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The Nature of Science and the Design Process standards can be found at the front of the 2010 Indiana Academic Standards for Science documents. The number designations of each are included below for clarification.

### **The Nature of Science**

5.5.1: Make predictions and formulate testable questions.

5.5.2: Design a fair test.

5.5.3: Perform investigations using appropriate tools and technologies that will extend the senses.

5.5.4: Use measurement skills and apply appropriate units when collecting data.

5.5.5: Keep accurate records in a notebook during investigations and communicate findings to others using graphs, charts, maps and models through oral and written reports.

5.5.6: Identify simple patterns in data and purpose explanations to account for the patterns.

6.5.1: Make predictions and develop testable questions based on research and prior knowledge.

6.5.2: Plan and carry out investigations—often over a period of several lessons—as a class, in small groups or independently.

6.5.3: Incorporate variables that can be changed, measured or controlled.

6.5.4: Use the principles of accuracy and precision when making measurements.

6.5.5: Test predictions with multiple trials.

6.5.6: Keep accurate records in a notebook during investigations.

6.5.7: Analyze data, using appropriate mathematical manipulation as required, and use it to identify patterns. Make inferences based on these patterns.

6.5.8: Evaluate possible causes for differing results (i.e., valid data).

6.5.9: Compare the results of an investigation with the prediction.

6.5.10: Communicate the findings through oral and written reports by using graphs, charts, maps and models.

### **The Design Process**

5.6.1: Evaluate and test the design using measurement.

5.6.2: Communicate how to improve the solution.

6.6.1: Identify a need or problem to be solved.

- 6.6.2: Brainstorm potential solutions.
- 6.6.3: Document the design throughout the entire design process.
- 6.6.4: Throughout the entire design process, document the design with drawings (including labels) in a portfolio or notebook so that the process can be replicated.
- 6.6.5: Select a solution to the need or problem.
- 6.6.6: Select the most appropriate materials to develop a solution that will meet the need.
- 6.6.7: Create the solution through a prototype.
- 6.6.8: Test and evaluate how well the solution meets the goal.
- 6.6.9: Evaluate and test the design.
- 6.6.10: Present evidence by using mathematical representations (e.g., graphs, data tables).
- 6.6.11: Communicate the solution (including evidence) using mathematical representations (graphs, data tables), drawings or prototypes.
- 6.6.12: Redesign to improve the solution based on how well the solution meets the need.