INDIANA DEPARTMENT of EDUCATION

# 2024 INDIANA CONTENT CONNECTORS

## SCIENCE

## GRADE 3

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# Indiana Content Connectors Context and Purpose

## Introduction

The Indiana Content Connectors for Grade 3 Science are the result of a process designed to identify, evaluate, synthesize, and create high-quality learning expectations for Indiana students with significant cognitive disabilities.

The Indiana Department of Education (IDOE) convened stakeholder committees to review proposed revisions to Indiana's Alternative Standards, known as content connectors. The content connectors are designed to measure the knowledge and skills of students with the most significant cognitive disabilities and are assessed with the state's alternate assessment. The content connectors are designed to ensure that all Indiana students in this population are prepared with essential knowledge and skills needed to access employment, enrollment, or enlistment leading to service.

## What are the Content Connectors and how should they be used?

The Indiana Content Connectors are designed to help educators, parents, students, and community members understand the necessary content for each grade level, and within each content area domain, to access employment, enrollment, or enlistment leading to service. These content connectors should form the basis for strong core instruction for all students at each grade level and content area. The content connectors identify the minimum academic content or skills to which Indiana students need access in order to be prepared for success after graduation, but they are not an exhaustive list.

While the Indiana Content Connectors establish key expectations for knowledge and skills and should be used as the basis for curriculum, the content connectors by themselves do not constitute a curriculum. It is the responsibility of the local school corporation to select and formally adopt curricular tools, including textbooks and any other supplementary materials, that align with Indiana Content Connectors. Additionally, corporation and school leaders should consider the appropriate instructional sequence of the content connectors as well as the length of time needed to teach each one. Every content connector has a unique place in the continuum of learning, but each content connector will not require the same amount of time and attention. A deep understanding of the vertical articulation of the standards will enable educators to make the best instructional decisions. These content connectors must also be complemented by robust, evidence-based instructional practices to support overall student development. By utilizing strategic and intentional instructional practices, other areas such as STEM and employability skills can be integrated with the content connectors.

## Acknowledgments

IDOE appreciates the time, dedication, and expertise offered by Indiana's K-12 general and special educators, higher education professors, representatives from business and industry, families, and other stakeholders who contributed to the development of the Indiana Content Connectors. We wish to specially acknowledge the committee members, as well as participants in the public comment period, who dedicated many hours to the review and evaluation of these content connectors designed to prepare Indiana students for success after graduation.

## Grade 3 Science

*Standards and content connectors identified as essential for mastery by the end of the grade level are indicated with gray shading and an "E."*

| Indiana Academic Standards | Content Connectors |
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| **Motion and Stability: Forces and Interactions** | |
| **3-PS2-1: Motion and Stability: Forces and Interactions**<br>Students who demonstrate understanding can:<br>Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and balanced forces pushing on a box from both sides will not produce any motion at all.] (E) | **3-PS2-1a:** Plan and conduct an investigation to provide evidence that when the forces on an object are balanced, the object remains at rest, and when the forces on an object are unbalanced, it results in motion. (E) |
| **3-PS2-2: Motion and Stability: Forces and Interactions**<br>Students who demonstrate understanding can:<br>Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a seesaw.] | **3-PS2-2a:** Use evidence to show a pattern in an object's motion and predict its future movement. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a seesaw.] (E) |
| **3-PS2-3: Motion and Stability: Forces and Interactions**<br>Students who demonstrate understanding can:<br>Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, | **3-PS2-3a:** Ask questions to determine the effect of electric or magnetic forces between objects that are not in contact. |

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| and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause-and-effect relationships could include how the distance between objects affects strength of the force, and how the orientation of magnets affects the direction of the magnetic force.] | **3-PS2-3b:** Ask questions to determine how electric or magnetic forces change based on different factors, such as the properties of the objects, the distance between them, and their orientation. (E) |
| **3-PS2-4: Motion and Stability: Forces and Interactions**<br>Students who demonstrate understanding can:<br>Define a simple design problem that can be solved by applying scientific ideas about magnets. [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.] | **3-PS2-4a:** Describe the scientific ideas necessary for solving a simple design problem about magnetic forces based on various changing factors. [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.] |
| **From Molecules to Organisms: Structures and Processes** | |
| **3-LS1-1: From Molecules to Organisms: Structures and Processes**<br>Students who demonstrate understanding can:<br>Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] (E) | **3-LS1-1a:** Use a model to describe common patterns in the life cycles of different plants and animals (e.g., all have in common birth, growth, reproduction, and death). (E) |
| **Ecosystems: Interactions, Energy, and Dynamics** | |
| **3-LS2-1: Ecosystems: Interactions, Energy, and Dynamics**<br>Students who demonstrate understanding can:<br>Construct an argument that some animals form groups that help members survive. | **3-LS2-1a:** Construct an argument to describe how animals benefit from living in groups (e.g., obtaining food, defense, coping with changes). |

| Heredity: Inheritance and Variation of Traits | |
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| **3-LS3-1: Heredity: Inheritance and Variation of Traits**<br>Students who demonstrate understanding can:<br>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. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] (E) | **3-LS3-1a:** 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. (E) |
| **3-LS3-2: Heredity: Inheritance and Variation of Traits**<br>Students who demonstrate understanding can:<br>Use evidence to support the explanation that traits can be influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and a pet dog that is given too much food and little exercise may become overweight.] | **3-LS3-2a:** Use evidence to demonstrate that traits can be influenced by the environment. |
| **Biological Evolution: Unity and Diversity** | |
| **3-LS4-1: Biological Evolution: Unity and Diversity**<br>Students who demonstrate understanding can:<br>Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] | **3-LS4-1a:** Interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] |

<table>
<tr><td>3-LS4-2: Biological Evolution: Unity and Diversity<br>Students who demonstrate understanding can:<br><br>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. [Clarification Statement: Examples of cause-and-effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.] (E)</td><td>3-LS4-2a: Use evidence to determine if a beneficial difference in a characteristic among individuals of the same species may provide advantages to surviving and reproducing (e.g., plants that have larger thorns than other plants may be less likely to be eaten by predators). (E)</td></tr>
<tr><td>3-LS4-3: Biological Evolution: Unity and Diversity<br>Students who demonstrate understanding can:<br><br>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. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]</td><td>3-LS4-3a: Use evidence from a specific environment to demonstrate that some organisms survive well, some survive less well, and some cannot survive at all in a particular habitat.</td></tr>
<tr><td rowspan="2">3-LS4-4: Biological Evolution: Unity and Diversity<br>Students who demonstrate understanding can:<br><br>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. [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.]</td><td>3-LS4-4a: Make a claim about a solution to a problem that is caused when the environment changes.</td></tr>
<tr><td>3-LS4-4b: Use evidence to identify how organisms are affected by environmental changes (e.g., some survive and reproduce, some move to new locations, some move into the transformed environment, some die).</td></tr>
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| Earth's Systems | |
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| **3-ESS2-1: Earth's Systems**<br>Students who demonstrate understanding can:<br>Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] (E) | **3-ESS2-1a:** Represent data in tables and graphical displays to describe and predict weather conditions. (E) |
| **3-ESS2-2: Earth's Systems**<br>Students who demonstrate understanding can:<br>Obtain and combine information to describe climates in different regions of the world. | **3-ESS2-2a:** Use information to describe various climates based on their long-term weather patterns. |
| **Earth and Human Activity** | |
| **3-ESS3-1: Earth and Human Activity**<br>Students who demonstrate understanding can:<br>Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lighting rods.] | **3-ESS3-1a:** Compare and contrast possible solutions and make a claim based on observations of impacts of a weather-related hazard. |
| **Engineering Design** | |
| **3-5-ETS1-1: Engineering Design**<br>Students who demonstrate understanding can:<br>Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. | **3-5-ETS1-1a:** Identify a solution to a problem based on a specific set of desired features (criteria) and available materials and resources (constraints). |
| **3-5-ETS1-2: Engineering Design**<br>Students who demonstrate understanding can: | **3-5-ETS1-2a:** Compare multiple solutions to a problem by investigating how well each solution works under certain conditions. |

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| Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. | **3-5-ETS1-2b:** Identify a design improvement to a problem by sharing ideas with peers. |
| **3-5-ETS1-3: Engineering Design**<br>Students who demonstrate understanding can:<br>Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. | **3-5-ETS1-3a:** Test design solutions to identify aspects of the design that can be modified or improved based on specific limitations. |