Unit 4: Life Cycles and Inherited Traits

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Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Unit 4: Life Cycles and Inherited Traits

Grade 3

Belleville Board of Education

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Unit Overview

Unit 4: Life Cycles and Inherited Traits

In this unit, students will:

- explore the life cycles of plants and animals
- discover inherited plant and animal traits

Vocabulary

- life cycle
- metomorphosis
- organisms
- pupa
- trait

Enduring Understanding

- Organisms all have in common birth, growth, reproduction, and death
- Plants and animals have traits inherited from parents
- Variation of traits exists in a group of similar organisms
- A given plant's life cycle always happens in the same order
- Reproduction is essential to the continued existence of every organism
- All organisms go through cycles, or stages, of growth

Essential Questions

- What are some plant life cycles?
- What are some animal life cycles?
- What are inherited plant and animal traits?
- How are rganisms similar?
- How are organisms different?

Exit Skills

By the end of Grade 3, Science Unit 4, the student should be able to:

- Develop models to describe that organisms have unique and diverse life cycles
- Develop a model to describe the stages of a plant's life cycle
- Develop a model to describe the stages of an animal's life cycle
- Determine all organisms have in common birth, growth, reproduction, and death
- Recognize plant and animal traits and where they come from
- Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents
- Explore evidence that inherited traits exist in a group of similar organisms

New Jersey Student Learning Standards (NJSLS-S)

3-LS1-1	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
3-LS1-1.1.1	Patterns of change can be used to make predictions.

3-LS1-1.2.1	Develop models to describe phenomena.
3-LS1-1.LS1.B.1	Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
3-LS3-1	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.
3-LS3-1.1.1	Similarities and differences in patterns can be used to sort and classify natural phenomena.
3-LS3-1.4.1	Analyze and interpret data to make sense of phenomena using logical reasoning.
3-LS3-1.LS3.A.1	Many characteristics of organisms are inherited from their parents.
3-LS3-1.LS3.B.1	Different organisms vary in how they look and function because they have different inherited information.

Interdisciplinary Connections

MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
LA.RI.3.2	Determine the main idea of a text; recount the key details and explain how they support the main idea.
MA.3.NBT	Number and Operations in Base Ten
LA.RI.3.7	Use information gained from text features (e.g., illustrations, maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
LA.RI.3.8	Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text.
LA.RI.3.9	Compare, contrast and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) the most important points and key details presented in two texts on the same topic.
MA.3.NF	Number and Operations—Fractions
LA.RF.3.3.C	Decode multisyllable words.
MA.3.MD.B.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
LA.W.3.7	Conduct short research projects that build knowledge about a topic.

Learning Objectives

Students will demonstrate ability to:

- explore plant life cycles and how a plant depends on its environment to live and reproduce
- build models of a plant life cycle
- explore patterns of change in animal life cycles, and use those patterns to make predictions
- investigate technology used to track patters of animal movement in order to understand reproductive behavior
- research offspring and parents of plants and animals
- interpret data about inherited traits by studying images

- compare and contrast various organisms

Suggested Activities & Best Practices

HMH Science Dimensions, Unit 4 - Lesson 1:

- **Engage:** "Can You Solve It?" lesson
- **Explore/Explain:** "So Many Changes", "How Do Life Cycles Differ?", and " Broken Cycles" lessons and hands-on activity (Explorations 1, 2, 3)
- **Elaborate:** Take it Further - XTreme Engineering Group extension activity
- **Evaluate:** "Lesson Check" and "Lesson Roundup" assessments (formative/summative)

HMH Science Dimensions, Unit 4 - Lesson 2:

- **Engage:** "Can You Solve It?" lesson
- **Explore/Explain:** "State by Stage" and "Major Changes" lessons and hands-on activity (Exploration 1, 2)
- **Elaborate:** Take it Further - People in Science extension activity
- **Evaluate:** "Lesson Check" and "Lesson Roundup" assessments (formative/summative)

HMH Science Dimensions, Unit 4 - Lesson 3:

- **Engage:** "Can You Solve It?" lesson and hands-on activity
- **Explore/Explain:** "Plants Have Parents" and "Do Animals Look Like Their Parents?" lessons and hands-on activity (Exploration 1, 2)
- **Elaborate:** "Discover More" extension activity
- **Evaluate:** "Lesson Check" and "Lesson Roundup" assessments (formative/summative)

HMH Science Dimensions, Unit 4 - Performance Task ():

- **Identify the Problem**
- **Research**
- **Brainstorm**
- **Design**
- **Compare**
- **Evaluate**

HMH Science Dimensions, Unit 4 - Unit Project (Life Cycle Model):

- **Plan and Design**
- **Analyze Results**
- **Restate Questiojn**

- **Claims, Evidence, and Reasoning**

Evidence of Student Learning - Checking for Understanding (CFU)

- Admit Tickets
- Anticipation Guide
- Common benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit tests

Primary Resources & Materials

- HMH Science Dimensions Grade 3, 2018

Ancillary Resources

- Scholastic News
- Science Weekly
- National Geographic Kids
- Bill Nye the Science Guy and appropriate educational videos
- TeacherTube/Youtube

Technology Infusion

- HMH Online Resources
- Brainpop
- SMARTboard
- PowerPoint
- Social Media
- Relevant YouTube/TeacherTube videos
- HMH Science Dimensions Digital Components
- Laptops
- Kahoot

Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;
- Visual and Performing Arts.

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Media Literacy

21st Century Skills

- Environmental Literacy
- Global Awareness
- Health Literacy

Differentiation

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Center-based instruction
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Intervention Strategies

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes

- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Special Education Learning

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- multiple test sessions
- multi-sensory presentation
- preview of content, concepts, and vocabulary
- reduced/shortened reading assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- Use open book, study guides, test prototypes

English Language Learning (ELL)

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;

- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

Sample Lesson

Using the template below, please develop a **Sample Lesson** for the first unit only.

Unit Name:

NJSLS:

Interdisciplinary Connection:

Statement of Objective:

Anticipatory Set/Do Now:

Learning Activity:

Student Assessment/CFU's:

Materials:

21st Century Themes and Skills:

Differentiation/Modifications:

Integration of Technology: