



**Grade 7 Science – Course 2**  
**Unit # 1- Life Science**  
**Topic 3 Reproduction and Growth – 17 Days**

**Unit Overview** Students will understand and apply scientific concepts, principles, and theories pertaining to the living environment setting and recognize the historical development/multicultural involvement of the ideas in science. Main ideas include: living things are alike yet different, structures in living things are related to their function and living things interact with their environment. Students consider systems and how they interact as they investigate cell function and cellular processes as well as exploring the human body as a system model, driven by the flow of energy and the cycling of matter. This leads to the study of reproduction and the plant and animal structures that support it. Students consider stability and change as a core concept in the biosphere.

**Topic Essential Question:** What factors influence the growth of organisms and their ability to reproduce?

**Lessons**

- Topic Launch/Quest Kickoff
- Lesson 1 Patterns of Reproduction
- Lesson 2 Plant Structure for Reproduction
- Lesson 3 Animal Behavior for Reproduction
- Lesson 4 Factors Influencing Growth
- Topic Close –Assessment, Quest Findings

**NYSSLS Performance Expectations**

**MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants, respectively. [Clarification Statement: Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds and creating conditions for seed germination and growth. Examples of plant structures could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.]**

**MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. [Clarification Statement: Examples of local environmental conditions could include availability of food, light, space, and water. Examples of genetic factors could include the genes responsible for size differences in different breeds of dogs. Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large ponds than they do in small ponds.] [Assessment Boundary: Assessment does not include genetic mechanisms, gene regulation, biochemical processes, or natural selection.]**

**MS-LS3-2. Develop and use a model to describe how asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. [Clarification Statement: Emphasis is on using models such as diagrams and simulations to describe the cause and effect relationship of gene transmission from parent(s) to offspring.]**

**Topic Opener**

**PE:** MS-LS1-5

**SEP:** Constructing Explanations and Designing Solutions

**DCI:**

**LS1.B – Growth and Development of Organisms**

- Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)

**CCC:** Cause and Effect

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**Highlighted labs are important to the understanding of the instructional concepts in this lesson and must be completed during Science instructional time. \**

- Topic Readiness Test
- **uConnect Lab – To Care or Not to Care**
- Quest Kickoff Video – How can we reduce the impact of construction on plants and animals?

**Lesson 1 – Patterns of Reproduction**

**PE:** MS-LS3-2

**SEP:** Developing and Using Models

**DCI:**

**LS1.B** – Growth and Development of Organisms

- Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. (secondary to MS-LS3-2)

**LS3.A** – Inheritance of Traits

- Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited. (MS-LS3-2)

**LS3.B** – Variation of Traits

- In sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other. (MS-LS3- 2)

**CCC:** Cause and Effect

**ZSpace Activities (code)**

**Embryonic Development A090**

[Embryonic Development - Teacher Activity Plan](#)

In this activity, students will explore the embryonic development of organisms and compare their stages of development.

[Embryonic Development - Student Worksheet](#)

[Embryonic Development - Student Worksheet GoogleDoc](#)

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**Guiding Objectives:**

- Students will analyze and investigate how organisms reproduce either sexually or asexually and how these reproductive processes result in the transfer of genetic information to their offspring.
- Students will develop and use models to describe how asexual reproduction results in offspring that are genetically identical while sexual reproduction results in offspring with genetic variation.
- Students will analyze the cause-and-effect relationship between the inheritance of half of an offspring’s genes from each parent and how this leads to variation in traits.

**Literacy Connection**

- Cite Textual Evidence

**Vocabulary**

- asexual reproduction
- sexual reproduction
- fertilization
- trait
- gene
- inheritance
- allele

**Academic Vocabulary**

- dominant

**Connect** - TE/SB p. 140

- Connect It!
- Quest Connection
- Write – Your Physical Traits

**Investigate** - TE/SB pp. 141-147

- ***u*Investigate Lab – Is it all in the Genes?\***
- Video – Patterns of Reproduction
- Interactivity – Inheritance of Traits
- Interactivity – Animal Reproduction
- Virtual Lab – You’ve Go to Divide to Multiply
- Model It! (p.142; 145)
- Reading Checks (pp.143; 146)
- Math Toolbox (p.143)

**Synthesize** - TE/SB pp. 147-148

- Interactivity – Twin Studies

**Demonstrate** – TE/SB pp.149

- Lesson 1 Check
- Lesson Quiz 1

\*Denotes accompanying lab video

<p><b><u>Lesson 2 – Plant Structures For Reproduction</u></b>  <b>PE:</b> MS-LS1-4  <b>SEP:</b> Engaging in Argument from Evidence  <b>DCI:</b>  <b>LS1.B</b> – Growth and Development of Organisms</p> <ul style="list-style-type: none"> <li>Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4)</li> </ul> <p><b>CCC:</b> Cause and Effect</p> <p><b>zSpace Activities (code)</b>  <b>Exploring Plants: Plant Reproduction (E426)</b>  <a href="#">Exploring Plants: Plant Reproduction - Teacher Activity Plan</a>          In this activity, students will take a closer look at the processes of photosynthesis and respiration. Students will learn how these two processes are responsible for the cycling of matter and the flow of energy into and out of plants.  <a href="#">Exploring Plants: Plant Reproduction - Student Wkst</a>  <a href="#">Exploring Plants: Plant Reproduction - Student Wkst GoogleDoc</a></p> <p><b>Fern Life Cycle (A095)</b>  <a href="#">Fern Life Cycle - Teacher Activity Plan</a>          In this activity, students will learn about the specialized plant structures that increase the fern’s probability of successful reproduction.  <a href="#">Fern Life Cycle - Student Worksheet</a>  <a href="#">Fern Life Cycle - Student Worksheet GoogleDoc</a></p> <p><b>Genetic Variations (A560)</b>  <a href="#">Genetic Variations - Teacher Activity Plan</a>          In this activity, students will investigate and uncover the advantages of variations as well as the genetic diversity necessary to maintain a healthy species. They will also think critically about the role humans play in the variations of animals.  <a href="#">Genetic Variations - Student Wkst 1</a>  <a href="#">Genetic Variations - Student Wkst 2</a>  <a href="#">Genetic Variations - Student Worksheet GoogleDocs</a></p>	<p><b>Savvas</b>  <b>Guiding Objectives:</b></p> <ul style="list-style-type: none"> <li>Students will explain and compare reproductive cycles in plants.</li> <li>Students will cite textual evidence to identify aspects of the text that lead to conceptual understanding of plant reproduction and seed dispersal.</li> <li>Students will create model drawings to illustrate the structures and sequence of events in plant reproduction.</li> </ul> <p><b>Literacy Connection</b></p> <ul style="list-style-type: none"> <li>Cite Textual Evidence</li> </ul> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>zygote</li> <li>pollination</li> <li>cones</li> <li>ovule</li> <li>fruit</li> <li>germination</li> </ul> <p><b>Academic Vocabulary</b></p> <ul style="list-style-type: none"> <li>disperse</li> </ul> <p><b>Connect</b> - TE/SB p. 150</p> <ul style="list-style-type: none"> <li>Connect It!</li> <li>Quest Connection</li> <li>Class Discussion – Seeds for Foods</li> </ul> <p><b>Investigate</b> - TE/SB pp. 151-156</p> <ul style="list-style-type: none"> <li>Video – Plant Structures for Reproduction</li> <li><b>uInvestigate Lab – Modeling Flowers</b></li> <li>Interactivity – Designer Flowers</li> <li>Literacy Connection (p.155)</li> <li>Reading Check (pp.153; 154)</li> </ul> <p><b>Synthesize</b> - TE/SB pp. 157-158</p> <ul style="list-style-type: none"> <li>Interactivity – Plants and Pollinators</li> <li>Model It! (p.157)</li> <li>Reading Check (p.157)</li> <li>Quest Check-In Interactivity – Protect the Plants</li> <li>Quest Check-In</li> </ul> <p><b>Demonstrate</b> – TE/SB p. 158</p> <ul style="list-style-type: none"> <li>Lesson 2 Check</li> <li>Lesson 2 Quiz</li> </ul>
<p><b><u>Lesson 3 – Animal Behavior for Reproduction</u></b></p>	<p><b>Savvas</b></p>

<p><b>PE:</b> MS-LS1-4  <b>SEP:</b> Engaging in Argument from Evidence  <b>DCI:</b>  <b>LS1.B</b> – Growth and Development of Organisms</p> <ul style="list-style-type: none"> <li>Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4)</li> </ul> <p><b>CCC:</b> Cause and Effect</p> <p><b>zSpace Activities (code)</b>  <b>Mitosis vs. Meiosis (A213)</b>  <a href="#">Mitosis vs. Meiosis - Teacher Activity Plan</a>          In this activity, students will examine the similarities and differences between mitosis and meiosis.  <a href="#">Mitosis vs. Meiosis - Student Worksheet</a>  <a href="#">Mitosis vs. Meiosis - Student Worksheet GoogleDoc</a></p>	<p><b>Guiding Objectives:</b></p> <ul style="list-style-type: none"> <li>Students will make observations and generalizations about how animals use behavior to increase chances of survival and reproduction.</li> <li>Students will develop and use models to: Convey information about types of mating systems; compare animal migration patterns with human movement patterns.</li> <li>Students will draw comparisons and make inferences about the relationship between fertilization strategies and parental investment.</li> </ul> <p><b>Literacy Connection</b></p> <ul style="list-style-type: none"> <li>Summarize Text</li> </ul> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>behavior</li> <li>instinct</li> <li>pheromone</li> <li>mating system</li> <li>migration</li> </ul> <p><b>Academic Vocabulary</b></p> <ul style="list-style-type: none"> <li>typically</li> </ul> <p><b>Connect</b> - TE/SB p. 160</p> <ul style="list-style-type: none"> <li>Connect It!</li> <li>Quest Connection</li> <li>Inquiry Warm-Up Lab – Communicating Without Words</li> </ul> <p><b>Investigate</b> - TE/SB pp. 161-166</p> <ul style="list-style-type: none"> <li><b>Investigate Lab – Behavior Cycles</b></li> <li>Video – Animal Behaviors for Reproduction</li> <li>Interactivity – They’re Acting Like Animals</li> <li>Model It! (p.162)</li> <li>Reading Check (pp. 165; 166)</li> <li>Math Toolbox (p.165)</li> <li>Literacy Connection (p.162)</li> </ul> <p><b>Synthesize</b> - TE/SB pp. 167-168</p> <ul style="list-style-type: none"> <li>Interactivity – Fireflies</li> <li>Quest Check-In Interactivity – The Mating Game</li> <li>Quest Check-In</li> </ul> <p><b>Demonstrate</b> – TE/SB p.168</p> <ul style="list-style-type: none"> <li>Lesson 3 Check</li> <li>Lesson 3 Quiz</li> </ul>
<p><b><u>Lesson 4 – Factors Influencing Growth</u></b></p>	<p><b>Savvas</b>  <b>Guiding Objectives:</b></p>

<p><b>PE:</b> MS-LS1-5  <b>SEP:</b> Constructing Explanations and Designing Solutions  <b>DCI:</b>  <b>LS1.B</b> – Growth and Development of Organisms</p> <ul style="list-style-type: none"> <li>Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)</li> </ul> <p><b>CCC:</b> Cause and Effect</p>	<ul style="list-style-type: none"> <li>Students will describe the cause and effect relationship for: Environmental factors that influence an organism’s growth; genetic factors that influence an organism’s growth.</li> <li>Students will construct explanations to identify methods to stimulate plant growth</li> <li>Students will identify the mechanisms that factor and control: plant growth and animal growth.</li> </ul> <p><b>Literacy Connection</b></p> <ul style="list-style-type: none"> <li>Analyze Text Structure</li> </ul> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>hormone</li> <li>auxin</li> <li>tropism</li> <li>photoperiodism</li> <li>dormancy</li> <li>metamorphosis</li> </ul> <p><b>Academic Vocabulary</b></p> <ul style="list-style-type: none"> <li>stimuli</li> <li>essential</li> </ul> <p><b>Connect</b> - TE/SB p. 170</p> <ul style="list-style-type: none"> <li>Connect It!</li> <li>Quest Connection</li> <li>Poll – Growing and Thriving</li> </ul> <p><b>Investigate</b> - TE/SB pp. 171-177</p> <ul style="list-style-type: none"> <li><b>Investigate Lab – Watching Roots Grow</b></li> <li>Video – Factors Influencing Growth</li> <li>Interactivity – See How They Grow</li> <li>Interactivity – Breeding Bigger Bovines</li> <li>Reading Check (p. 177)</li> <li>Plan It! (p.174)</li> <li>Literacy Connection (p.173)</li> </ul> <p><b>Synthesize</b> - TE/SB p. 178-179</p> <ul style="list-style-type: none"> <li>Interactivity – Growing Crops</li> <li>Quest Check-In Interactivity – Make Your Construction Case</li> <li>Quest Check-In</li> <li>Math Toolbox (p.178)</li> </ul> <p><b>Demonstrate</b> – TE/SB p.179</p> <ul style="list-style-type: none"> <li>Lesson 4 Check</li> <li>Lesson 4 Quiz</li> </ul>
<p><b>Topic Close</b></p> <ul style="list-style-type: none"> <li>Topic 3 Assessment and Remediation TE/SB pp. 182-185</li> <li>Quest Finding and Reflection TE/SB p. 185</li> </ul>	<p><b>Topic 3 Enrichment</b></p> <p><b>Topic 3 - Lesson 1 Enrichment</b></p> <ul style="list-style-type: none"> <li>Enrichment – Organism Reproduction</li> </ul> <p><b>Topic 3 - Lesson 2 Enrichment</b></p> <ul style="list-style-type: none"> <li>Enrichment – Spore Toss</li> <li>Little Bits – Robotics and Invention Activities (p.159).</li> </ul> <p><b>Topic 3 - Lesson 3 Enrichment</b></p> <ul style="list-style-type: none"> <li>Enrichment – Emperor Penguins</li> <li>Extraordinary Science – Avian Artists (p.159)</li> </ul> <p><b>Topic 3 - Lesson 4 Enrichment</b></p> <ul style="list-style-type: none"> <li>Enrichment – Silkworm Secrets</li> <li>Case Study – Warmer Waters, Fewer Fish</li> </ul>
<p><b>English Language Learners</b></p>	<p><b>Listening</b></p> <ul style="list-style-type: none"> <li><b>Cross- Linguistic Practices:</b> Gives students opportunities to make connections between what they hear and their home language (For example, allow students to listen to a passage and identify cognates).</li> </ul>

<p><b>(ELL) Enhancements</b> To access <a href="#">hyperlinked</a> material, you must be logged into your BPS Google Drive</p>	<ul style="list-style-type: none"> <li>● <a href="#">Activating Prior Knowledge</a> Activating prior knowledge means both eliciting from students what they already know and building initial knowledge that they need in order to access upcoming content.</li> <li>● <a href="#">Visuals</a> - GIFs, pictures- will assist students in understanding what they are listening to. Use <a href="#">visual thinking strategies</a> to set the lens for learning.</li> <li>● Video to review or introduce a topic – use <a href="#">closed captioning</a> to help students see the words and pronunciations while they listen to the content.</li> <li>● <a href="#">Word stretching / Vowel stretching</a> when instructing allows students to listen closely to the pronunciation of the word.</li> <li>● <a href="#">Performance Level Descriptors</a> this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of listening. Scroll for grade 7.</li> </ul> <p><b>Speaking</b></p> <ul style="list-style-type: none"> <li>● <a href="#">Sentence Stems/Frames</a> - to begin a sentence - such as <i>Evolution is...</i> or <i>I think that evolution is...</i></li> <li>● <a href="#">Academic Conversation Starters</a>: Have a visual of a list of academic sentence starters that students can refer to in a discussion.</li> <li>● <a href="#">Choral Reading</a> - To build fluency, self-confidence and motivation with <a href="#">reading/speaking</a>.</li> <li>● Create <a href="#">movement</a> to go with the word. Movement can be a motivating factor, as well as a kinesthetic tool for conceptualizing the rhythm and flow of fluent reading while triggering brain function for optimal learning.</li> <li>● <a href="#">Performance Level Descriptors</a> This document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of speaking. Scroll for grade 7.</li> </ul> <p><b>Reading</b></p> <ul style="list-style-type: none"> <li>● Supplementary Text to help reinforce concepts.</li> <li>● <a href="#">Visual Aids</a> - Pictures or models to support vocabulary words and concepts</li> <li>● Video to review or introduce a topic - use <a href="#">closed captioning</a> to help students read along while they listen to the content.</li> <li>● <a href="#">4 Square / Frayer models</a> to help students gain a deeper understanding of vocabulary.</li> <li>● <a href="#">Highlighting</a> important text to assist students in answering questions after the reading.</li> <li>● <a href="#">Chunking</a>-Break reading of text into chunks or paragraphs</li> <li>● <a href="#">Vocabulary Morphology</a>- Morphology relates to the segmenting of words into affixes (prefixes and suffixes) and roots or base words, and the origins of words. Understanding that words connected by meaning can be connected by spelling can be critical to expanding a student’s vocabulary.</li> <li>● <a href="#">Performance Level Descriptors</a> this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of reading. Scroll for grade 7.</li> </ul> <p><b>Instructional Accommodations (depending on the student’s needs)</b></p> <ul style="list-style-type: none"> <li>● <b>Extended time</b> for tests in class, projects and assignments</li> <li>● <b>Directions read.</b> Broken down as necessary</li> <li>● <b>Model</b> how to complete the activity in the lesson</li> <li>● <b>Oral simplification</b> of directions or questions</li> <li>● <b>Translated version</b> of test when available. Student may have both version English and native language version</li> <li>● Use of <a href="#">approved bilingual glossaries</a> from NYS in each subject</li> </ul>
<p><b>Special Education Modifications</b></p>	<p><b>Instructional</b></p> <ul style="list-style-type: none"> <li>● <b>Pre-teach</b> vocabulary</li> <li>● Use <b>picture vocabulary</b></li> <li>● Scaffold <b>Depth of Knowledge</b> questions</li> <li>● Provide copy of notes/<b>notes in “cloze”</b> form</li> <li>● Use of <b>Think, Pair, and Share</b> strategy to help process information</li> </ul>

<p>Special Education students must have accommodations as per Individual Educational Plan (IEP)</p>	<ul style="list-style-type: none"> <li>● <b>Scaffold</b> written assignments with the use of <b>graphic organizers</b></li> <li>● Allow for <b>multiple ways to respond</b> (verbal, written, response board)</li> <li>● Provide <b>model of performance task</b></li> <li>● <b>Modify informational text</b> to fit the needs of the students</li> <li>● Provide a digital or paper <b>interactive notebook</b></li> <li>● Present complex <b>tasks in multiple ways</b></li> <li>● Provide <b>mnemonic strategies</b> for scientific concepts</li> </ul> <p><b>Technology:</b></p> <ul style="list-style-type: none"> <li>● <b>Audio</b> reading of text</li> <li>● <b>Text to type</b> functions</li> <li>● <b>Videos</b> to clarify/visualize science concepts</li> <li>● <b>Record class lecture/discussions</b> and make accessible to student</li> <li>● <b>Nearpod</b>- interactive presentations of notes</li> </ul> <p><b>In Class Assessments</b></p> <ul style="list-style-type: none"> <li>● Provide <b>multiple options</b> for projects</li> <li>● <b>Use of timer</b> in class</li> <li>● Break all complex tasks into chunks</li> </ul>
<p><b>Step Up to Writing</b> Step Up to Writing Materials can be found in BPS Science K-12 Schoology Folder □ Grade 5 Resources □ Grade 5 SUTW materials</p>	<ul style="list-style-type: none"> <li>● Easy Two-Column Notes</li> <li>● Breaking Down Definitions</li> <li>● Paragraph Frame- What I Learned</li> <li>● <a href="#">Performance Level Descriptors</a> this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of writing. Scroll for grade 7.</li> </ul>
<p><b>Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom</b></p>	<ul style="list-style-type: none"> <li>● Materials, resources, and/or discussions address diverse cultural backgrounds and real-world applications</li> <li>● Artifacts (posters, charts, etc.) in the science classroom are representative of the cultures of the student population</li> <li>● All students are given an opportunity to engage in science discourse</li> <li>● Teacher demonstrates high expectations for all students</li> </ul>