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Unit Title: Life Cycles	Content Area: Life Science	Grade Level: 5
Unit Summary:		
Unit Essential Questions: <ul style="list-style-type: none"> • What are some of the cycles that occur in nature? • What patterns of change can be seen among organisms? • What is an organism? 		Unit Enduring Understandings: <ul style="list-style-type: none"> • Organisms (plants, humans and animals) have a predictable life cycle, go through a metamorphosis and have an essential part of life on earth.
NJCCCS: 5.3.4.D.1		
NGSS Performance Expectations: <i>Students who demonstrate understanding can...</i> <ul style="list-style-type: none"> • 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. [Clarification Statement: Changes organisms go through during their life form a pattern.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.] 		
Primary CCSS ELA/Literacy Connections: SL.3.5 Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details. (3-LS1-1)		Primary CCSS Mathematics Connections: MP.4Model with mathematics. (3-LS1-1) 3.NBT Number and Operations in Base Ten (3-LS1-1)3.NFNumber and Operations—Fractions (3-LS1-1)

Lesson Pace & Sequence

Lesson Title/Number: What is a Life Cycle? /Lesson 1		Learning Objective(s): After identifying the main stages of the life cycle using a KWL chart and reading background texts (2) on plants, TLWBAT demonstrate basic understanding of the life cycle of a plant by participating in class discussions and summarizing key concepts in science journal with at least 80% mastery independently.			Lesson Duration: 75 minutes
Learning Cycle <i>What lesson elements will support students' progress towards mastery of the learning objective(s)?</i> <i>*Elements do not have to be in conducted in sequence.</i>	Learning Activities <i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i>	Resources/Materials <i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i>	Science and Engineering Practices <i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i>	Disciplinary Core Ideas <i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i>	Crosscutting Concepts <i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i>
Elicit: <i>How will you access students' prior knowledge?</i>	Ask students to name and describe the main stages of the life cycle of human beings. Record responses by using a graphic organizer: KWL chart.	<ul style="list-style-type: none"> • KWL Chart 			
Engage: <i>How will you capture students' interest and get students' minds focused on the concept/topic?</i>	The interest of the students will be captured by showing a clip on the life cycle of a plant and progress through an interactive online activity that illustrates the various stages of a flowering seed plant.	<ul style="list-style-type: none"> • From Seed to Flower 			
Explore: <i>What hands-on/minds-on common</i>	As the lesson progresses, students will be encouraged to	<ul style="list-style-type: none"> • Post it notes • Marker 		LS1.C: Organization for Matter and Energy Flow in Organisms	

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<p>experience(s) will you provide for students?</p>	<p>pose any questions and/or ideas on things they would like to learn about the life cycle of organisms by writing it on a post it note. The KWL chart will be used as an ongoing reference (anchor chart) to promote recall and understanding of organisms and the patterns that they go through (life cycle).</p>	<ul style="list-style-type: none"> • Chart paper 		<ul style="list-style-type: none"> • Plants acquire their material for growth chiefly from air and water. (5-LS1-1) 	
<p>Explain: How will you help students connect their exploration to the concept/topic under investigation?</p>	<p>The students will be guided through the interactive activity of the stages of a plant to help them make the connection between the life cycle of organisms.</p>				
<p>Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</p>	<p>For the introductory lesson, students will pose questions throughout the lesson as the KWL chart may be used a center activity, during the discussion component of lesson, and students may complete the Life Cycle of a Seed Plant activity in a whole or small group setting and record key topics in science journals.</p>	<ul style="list-style-type: none"> • Post it notes • Science journals 			
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Students will demonstrate understanding of the life cycle by being able to list the main life stages of an organism. Students will also be assessed by responding to selected discussion questions.</p>	<ul style="list-style-type: none"> • From Seed to Flower : http://vitalnj.pbslearningmedia.org/resource/tdc02.sci.life.colt.plantsgrow/from-seed-to-flower/ • Life Cycle of a Seed Plant : http://vitalnj.pbslearningmedia.org/resource/lsp07.sci.life.stru.seedplant/life-cycle-of-a-seed-plant/ <p>free registration to website may be required</p>			
<p>Extend: How will students deepen their conceptual</p>	<p>Students will deepen their conceptual understanding by</p>	<ul style="list-style-type: none"> • Life Cycle of a Flowering Plant (booklet): 			

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<p>understanding through use in new context?</p>	<p>reading background text which will cover the conceptual content. Homework may also be given to deepen understanding on Life Cycle of a Plant.</p>	<p>http://www.scholastic.com/content/collateral_resources/pdf/76/0545223776_e005.pdf</p> <ul style="list-style-type: none"> Plant Life Cycles (worksheet): http://www.k12reader.com/reading-comprehension/Gr2_Wk4_Plant_Life_Cycles.pdf 			
<p>Lesson Title/Number: Life Cycle of a Plant Project /Lessons 2-10</p>		<p>Learning Objective(s): After reviewing the life cycle of a plant by reviewing homework assignment, TLWBAT reinforce understanding by creating an apparatus that will track the growth of three plant seeds and measure the growth stages of each organism over the course a few weeks and record data on a line graph. (on-going objective)</p>			<p>Lesson Duration: 100 minutes</p>
<p align="center">Learning Cycle</p> <p><i>What lesson elements will support students' progress towards mastery of the learning objectives(s)?</i></p> <p><i>*Elements do not have to be in conducted in sequence.</i></p>	<p align="center">Learning Activities</p> <p><i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Resources/Materials</p> <p><i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i></p>	<p align="center">Science and Engineering Practices</p> <p><i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Disciplinary Core Ideas</p> <p><i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i></p>	<p align="center">Crosscutting Concepts</p> <p><i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i></p>
<p>Elicit: How will you access students' prior knowledge?</p>	<p>Ask students recall the life cycle of a plant.</p>	<ul style="list-style-type: none"> Posted KWL Chart completed Plant Cycle Diagram: http://vitalnj.pbslearningmedia.org/resource/lsp07.sci.life.stru.seedplant/life-cycle-of-a-seed-plant/ 			
<p>Engage: How will you capture students' interest and get students' minds focused on the concept/topic?</p>	<p>Inform the students that they will have the option of selecting 3 out of 5 seeds to observe over the next couple of days to measure their growth and development. Lesson may be modified by having students grow 2 plants.</p>	<ul style="list-style-type: none"> Seeds: corn, kidney bean, radish, lima bean, pinto or sunflower 	<p>Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and</p> <ul style="list-style-type: none"> Support an argument with evidence, data, or a model. (5-LS1-1) designed world(s). 		
<p>Explore: What hands-</p>	<p>The hands on component of the</p>	<ul style="list-style-type: none"> Clear plastic cup or plastic 	<p>Engaging in Argument from</p>	<p>LS1.C: Organization for Matter</p>	<p>Energy and Matter</p>

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<p>on/minds-on common experience(s) will you provide for students?</p>	<p>lesson will take place when the students set up their apparatus to grow 2-3 plants inside of a sandwich bag.</p>	<p>sandwich bag</p> <ul style="list-style-type: none"> • Paper towels • Metric rulers • Permanent markers • Seeds: corn, kidney bean, radish, lima bean, pinto or sunflower 	<p>Evidence</p>	<p>and Energy Flow in Organisms</p> <ul style="list-style-type: none"> • Plants acquire their material for growth chiefly from air and water. (5-LS1-1) 	<ul style="list-style-type: none"> •Matter is transported into, out of, and within systems. (5-LS1-1)
<p>Explain: How will you help students connect their exploration to the concept/topic under investigation?</p>	<p>Over the course of the next few days students will make observations and record data on the growth and development of each seed's germination to track the stage of the plant development.</p>	<ul style="list-style-type: none"> • Data sheet • Metric rulers • Science journals • How Do Seeds Grow?: https://www.teachervision.com/tv/printables/TCR/0743936655_011-012.pdf 			
<p>Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</p>	<p>Students will apply their learning by recording findings on data sheet of apparatus while working in small groups.</p>				
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Students will demonstrate understanding of the life cycle by being able to record observation of the life cycle stages of the plant over the next couple of weeks, participating in discussions in a whole and small group setting and creating the projects.</p>	<ul style="list-style-type: none"> • From Seed to Flower : http://vitalnj.pbslearningmedia.org/resource/tdc02.sci.life.colt.plantsgrow/from-seed-to-flower/ • Life Cycle of a Seed Plant: http://vitalnj.pbslearningmedia.org/resource/lsp07.sci.life.stru.seedplant/life-cycle-of-a-seed-plant/ <p>[Free registration to website may be required.]</p>			
<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>	<p>Students will deepen their conceptual understanding by creating and maintaining the apparatus over the next couple of weeks. Students will record data and graph results on a line graph.</p>	<ul style="list-style-type: none"> • Line graph: http://nces.ed.gov/nceskids/graphing/Classic/ • Stages of Plant Growth by Cindy Grigg (membership required for edhelper) 			

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	Students may have the opportunity to demonstrate independently understanding by completing comprehension handout of the stages of plant growth.				
Lesson Title/Number: Life Cycle of an Organism/Lessons 3-9		Learning Objective(s): After presenting and reviewing expectations of the unit project: The Life Cycle, TLWBAT select an organism to research its life cycle and summarize the main stages in a form of a time line and compare it to the life stages of another organism (same species) with a score of 80% or greater while working in a small group.			Lesson Duration: 200 minutes
Learning Cycle <i>What lesson elements will support students' progress towards mastery of the learning objectives(s)?</i> <i>*Elements do not have to be in conducted in sequence.</i>	Learning Activities <i>What specific learning experiences will support ALL students' progress towards mastery of the learning objective(s)?</i>	Resources/Materials <i>What curricular resources/materials are available to facilitate the implementation of the learning activities?</i>	Science and Engineering Practices <i>What specific practices do students need to use in order to progress towards mastery of the learning objective(s)?</i>	Disciplinary Core Ideas <i>What core ideas do students need to understand in order to progress towards mastery of the learning objective(s)?</i>	Crosscutting Concepts <i>What crosscutting concepts will enrich students' application of practices and their understanding of core ideas?</i>
Elicit: How will you access students' prior knowledge?	Remind the students that throughout this unit they have discussed and observed the life cycles of humans and plants. For this next unit project they will select two organisms from the same species to compare life cycle stages.				
Engage: How will you capture students' interest and get students' minds focused on the concept/topic?	Students will be engaged by having them select the organism of choice. Ideas may be generated by showing them pictures of life cycle diagrams of some animals and/or modeling how to navigate through the website which includes the life cycle of some organisms: butterflies, dragonflies and frogs.	<ul style="list-style-type: none"> Animal Life Cycles: http://www.education.com/slideshow/color-the-animal-life-cycles/color-life-cycle-20/#color-life-cycle-2 Life Cycles of Selected Animals: http://vitalnj.pbslearningmedia.org/search/?q=life+cycle+ 	Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and <ul style="list-style-type: none"> Support an argument with evidence, data, or a model. (5-LS1-1) designed world(s). 		

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<p>Explore: What hands-on/minds-on common experience(s) will you provide for students?</p>	<p>The hands on component of the lesson will take place when the students have the opportunity to engage in research based activities: going to the computer lab, reading text from books, magazines or online and navigating through websites especially the PBS website to determine which animal will be selected for unit project.</p>	<ul style="list-style-type: none"> • Internet and computer access • Books • Magazines • Media center • Science journals 	<p>Engaging in Argument from Evidence</p>	<p>LS1.C: Organization for Matter and Energy Flow in Organisms</p> <ul style="list-style-type: none"> • Plants acquire their material for growth chiefly from air and water. (5-LS1-1) 	<p>Energy and Matter</p> <ul style="list-style-type: none"> •Matter is transported into, out of, and within systems. (5-LS1-1)
<p>Explain: How will you help students connect their exploration to the concept/topic under investigation?</p>	<p>Provide students will a model of a Life Cycle Timeline Project to serve as a reference for the students to use for completing this assignment. This will help them make connections to the unit topic which will guide them through the research component of the unit.</p>	<ul style="list-style-type: none"> • Life Cycle Project example (prepared by teacher) 			
<p>Elaborate: How will students apply their learning and develop a more sophisticated understanding of the concept/topic?</p>	<p>Students will develop a more sophisticated understanding by putting all elements together on a poster on selected organisms.</p>	<p>Suggested materials:</p> <ul style="list-style-type: none"> • Poster board • Markers • Scissors • Construction paper • Glue • Tape • Old magazines • Crayons or colored pencils 			
<p>Evaluate: How will students demonstrate their mastery of the learning objective(s)?</p>	<p>Students will demonstrate understanding of the life cycle of organisms by including the stages of both classes on poster board. If able the students may also graph the growth development just like they are doing for the plants. (Example of comparisons of organisms: butterfly v. moth or</p>				

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	<p>cat v. dog).</p> <p>Lesson may be modified by having students focus on the life cycle of one organism.</p>				
<p>Extend: How will students deepen their conceptual understanding through use in new context?</p>	<p>Students will deepen their conceptual understanding by creating and maintaining the apparatus over the next couple of weeks.</p> <p>Students may have the opportunity to demonstrate independently understanding by completing comprehension handout of the stages of plant growth.</p>	<ul style="list-style-type: none"> • Animal Classification: Thinking Questions: http://www.superteacherworksheets.com/animals.html • Animal Classification Worksheet: http://www.tlsbooks.com/pdf/classifying6.pdf <p>[This activity may be extended by showing students what specifically groups the 16 animals together based on the scientific classification: kingdom, phylum, class and order.]</p>			