



8th grade Science Guide

2023-2024
SCI801/802 & SCI8010/8020

<http://grading.dmschools.org>

<http://science.dmschools.org>

Foreword

The purpose of this guide is to:

- Provide guidance for scoring student evidence.
- Identify pacing for evidence collection.

This curriculum guide is *not...*

- Used for designing instruction (you'll use your curricular materials for that – working through each lesson as designed).
- Meant to restrict your creativity as a teacher.
- A ceiling of what your students can learn, nor a set of unattainable goals.

Instead, the curriculum guide *is* meant to be a common vision for student learning and a set of targets and success criteria directed related to grade level standards by which to measure and report student progress and provide meaningful feedback.

The curriculum guide outlines the learning that is **most essential** for student success; it is our district's guaranteed and viable curriculum. The expectation is that every student in our district, regardless of school or classroom, will have access to and learn these targets. As the classroom teacher, you should use the materials within our adopted curriculum to help you to scaffold up to the learning targets and extend your students' learning beyond them.

Please consider this guide a living and dynamic document, subject to change and a part of a continuous feedback loop.

8th grade: Year at a Glance

Curriculum Access: [OpenSciEd](#)

Semester 1	Topic 1: Contact Forces	Topic 2: Sound Waves	Topic 3: Forces at a Distance
Reporting frequency of topic scores	7 weeks	5 weeks	6 Weeks
Approximate beginning and end dates for the topics	8/28 – 10/12	10/18-11/21	11/27-1/12
Specific Pacing	Skip Lesson 16	Lesson 12 (optional), consider condensing 8 & 9	
Standards Aligned	MS-PS2-2 , MS-PS3-1 MS-ETS1-3 , MS-ETS1-2 , MS-PS2-1	MS-PS4-1 , MS-PS4-2	MS-PS2-3 , MS-PS2-5 , MS-PS3-2

Semester 2	Topic 4: Earth in Space	Topic 5: Genetics	Topic 6: Natural Selection and Ancestry
Reporting frequency of topic scores	5 weeks	6 weeks	7 weeks
Approximate beginning and end dates for the topics	1/18-2/23	2/26-4/12	4/15 – 5/24
Specific Pacing	Skip Lesson 8-12		Skip Lesson 14
Standards Aligned	MS-ESS-1-1 , MS-ESS-1-2 , MS-PS2-4 , MS-ESS1-3	MS-LS1-5 , MS-LS3-1 , MS-LS3-2 , MS-LS4-5 , MS-LS1-2 , MS-LS1-4	MS-LS4-1 , MS-LS4-4 , MS-LS4-6 MS-LS4-2

Standards-Referenced Grading Basics

Our purpose in collecting a body of evidence is to:

- Allow teachers to determine a defensible and credible topic score based on a representation of student learning over time.
- Clearly communicate where a student’s learning is based on a topic scale to inform instructional decisions and push student growth.
- Show student learning of targets through multiple and varying points of data
- Provide opportunities for feedback between student and teacher.

Start at Level 3 when determining a topic → score.

Scoring

A collaborative scoring process is encouraged to align expectations of the scale to artifacts collected. Routine use of a collaborative planning and scoring protocol results in calibration and a collective understanding of evidence of mastery. Enough evidence should be collected to accurately represent a progression of student learning as measured by the topic scale. Teachers look at all available evidence to determine a topic score. All topic scores should be defensible and credible through a body of evidence.

*****Only scores of 4, 3.5, 3, 2.5, 2, 1.5, 1, and 0 can be entered as Topic Scores.**

Multiple Opportunities

Philosophically, there are two forms of multiple opportunities, both of which require backwards design and intentional planning. One form is opportunities planned by the teacher throughout the unit of study and/or throughout the semester. The other form is reassessment of learning which happens after completing assessment of learning at the end of a unit or chunk of learning.

Students will be allowed multiple opportunities to demonstrate proficiency. Teachers need reliable pieces of evidence to be confident students have a good grasp of the learning topics before deciding a final topic score. To make standards-referenced grading work, the idea of “multiple opportunities” is emphasized. If after these opportunities students still have not mastered Level 3, they may then be afforded the chance to reassess.

Evidence shows the student ...	Topic Score
Demonstrates proficiency (AT) in all learning targets and success at Level 4	4.0
Demonstrates proficiency (AT) in all learning targets with partial success at Level 4	3.5
Demonstrates proficiency (AT) in all learning targets	3.0
Demonstrates proficiency (AT) in at least half of the learning targets	2.5
Demonstrates some success criteria (PT) toward all learning targets	2.0
Demonstrates some success criteria (PT) towards some of the learning targets	1.5
Does not yet meet minimum criteria for the targets.	1.0
Produces no evidence appropriate to the learning targets at any level	0

Guiding Practices of Standards-Referenced Grading

1. A consistent 4-point grading scale will be used.
2. Student achievement and behavior will be reported separately.
3. Scores will be based on a body of evidence.
4. Achievement will be organized by learning topic and converted to a grade at semester’s end.
5. Students will have multiple opportunities to demonstrate proficiency.
6. Accommodations and modifications will be provided for exceptional learners.

Anatomy of a Scale-

Unit Narrative:

Provide an overview and context of the unit, big understandings, and student experience—including by not limited to vocabulary, inquiry-based questions/concepts, pacing and number of lessons

Topic Title:

Named topic in infinite campus, with approximate number of paced weeks

Exceeding Grade Level (ET):

Possible level four task listed including prior learning, cognitive complexity, integrated skills, real world relevance: authentic application beyond the classroom.

Achieving Grade Level (AT):

Level 3 targets are listed within the topic scale and are the grade level expectation for students in all classes.

Success Criteria (listed below the target) should be clarified/ revised by the building level PLC as they collaborate to unpack the Level 3 targets.

Item Bank:

Linked resources for each learning target. Guiding/Inquiry questions, ideas, and/or concepts are below the base line examples to ensure district wide coherence.

Unit 1:		
Unit Narrative: In this unit, students		
Topic	Exceeding Grade Level (ET)	Achieving Grade Level (AT)
When collecting evidence related to the 3, it will be recorded in these topics in Infinite Campus.		The Level 3 Targets are the grade level expectation for students in all classes. Success Criteria (listed below the target) should be clarified/ revised by the building level PLC as they collaborate to unpack the Level 3 targets. Guiding Question to complete this process: What are the essential pieces of knowledge students need to have to show progression towards the grade level standard/expectation (level 3)?
Topic Title (weeks)	Possible Task: * *A level four task should include the following: prior learning; cognitive complexity; integrated skills; real world relevance; authentic application beyond the classroom.	LT1- Learning that shows evidence of progressing towards the grade level learning target: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
		LT2- Learning that shows evidence of progressing towards the grade level learning target: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
		LT3- Learning that shows evidence of progressing towards the grade level learning target: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Item Bank:		
Target: Resources to teach:	Target: Resources to teach:	Target: Resources to teach:
Standard Language	Standard Language	Standard Language
Guiding Questions, Ideas, and/or Concepts Ideas and concepts in the spaces below are base line examples for all to use to ensure district wide coherence. Please add to these as you see instructional opportunities.		

Unit 1: Contact Forces

Unit Narrative from [OpenSciEd](#)

Driving Question: Why do things sometimes get damaged when they hit each other?

Topic	Achieving Grade Level (AT)
<p>When collecting evidence related to these targets, it will be recorded in this topic in Infinite Campus.</p>	<p>The Level 3 Targets are the grade-level expectations for students in all classes. <i>Success Criteria</i> are provided below each target.</p>
<p>Contact Forces 7 weeks 8/28 – 10/12</p>	<p>LTIA- Analyze and interpret data to figure out that all solid objects behave elastically up to a point, and that the forces between objects in a collision are always equal in size and opposite in direction. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Develop and use free body diagram models to represent the changes in the relative strength of forces on different objects in a collision. Addressed: Lessons 4 and 5 <input type="checkbox"/> Develop and use system models to support explanations for how contact forces, including friction and air resistance, cause energy to be transferred from one part of the system to another before, during, and after a collision. Addressed: Lesson 2, 5, 8 and 9 <input type="checkbox"/> Plan out an investigation for testing including independent, dependent, and controlled variables. Addressed: Lessons 4 and 5 <input type="checkbox"/> Carry out investigation for testing including independent, dependent, and controlled variables. Addressed: Lessons 3, 4, 7, 9 and 12 <p>LTIB- Create and use mathematical models to determine how changes in the mass and speed of an object affect the amount of kinetic energy that object has. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Analyze data to describe the relationship between kinetic energy and mass as a linear proportional relationship Addressed: Lessons 7-9 <p>LTIC- Analyze data from investigations to determine what materials better protect objects in a collision to design a new solution. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Plan an investigation to determine which cushioning materials best reduce peak forces in a collision. Addressed: Lesson 12 <input type="checkbox"/> Carry out and analyze data from an investigation about how the shape and size of various materials affect force distribution in a cushioning structure. Addressed: Lesson 13 <input type="checkbox"/> Analyze the similarities and differences between cushioning materials for force distribution. Addressed: Lessons 11-13 <p>LTID- Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Develop macroscopic models of microscopic structures making up materials used in a design solution. Addressed: Lesson 13 <input type="checkbox"/> Use models to generate data about how space deforms, contact time, and peak forces in a collision are related. Addressed: Lessons 12 and 13 <input type="checkbox"/> Identify trade-offs and optimize designs solutions using evidence from investigations to solve different design problems for different stakeholders and different contexts. Addressed: Lessons 11 and 14

Resources

[Teams Folder](#)

Need more help? Check out the [Unit Webinar](#) for Teachers

LTIA	LTIB	LTIC	LTID
<p style="text-align: center;">Assessment Opportunities</p> <p>Lesson 4: Task Part 2, 3, 4, 5, and 10 Independent, Dependent and Controlled Variables</p> <p>Lesson 5: Task Part 8 and 12</p> <p>Lesson 6: Soccer Assessment-questions 1, 2, and 5</p> <p>Lesson 10: Baseball Assessment-questions 1, 2, 3</p> <p>Lesson 15: Cheerleading Assessment Part 1- questions 2a, 2b</p>	<p style="text-align: center;">Assessment Opportunities</p> <p>Lesson 6: Soccer Assessment-questions 3, 4, 6, and 7</p> <p>Lesson 7: Graphing Kinetic Energy Relationships</p> <p>Lesson 10: Baseball Assessment-questions 4-12</p>	<p style="text-align: center;">Assessment Opportunities</p> <p>Lesson 11: Pre-Assessment-Protection Device Design</p> <p>Lesson 12: Task part 5-Compare Class Data</p> <p>Lesson 15: Cheerleading Assessment</p>	<p style="text-align: center;">Assessment Opportunities</p> <p>Lesson 12: Task part 9- Construct Individual Material Explanation</p> <p>Lesson 14: Protective Device Redesign and Stakeholder feedback</p> <p>Lesson 15: Cheerleading Assessment Part 1-questions 1a, 1b</p> <p>Lesson 15: Cheerleading Assessment Part 2</p>

Consumable and locally sourced materials

[Review full list of materials here](#)

<ul style="list-style-type: none"> • Index card: green and red • Tape • Meter stick • Rice Noodles • Brick • Painter’s tape • Soda Cracker • Cooking Spray • Wax Paper • Oven or toaster • Paper towel • Small Rock • Box • Plastic Cup • Sponge • Box Cutter • Coffee Stirrer • Duct Tape • Styrofoam Sheet • Scrap Paper • Post-its 	<ul style="list-style-type: none"> • Markers • Colored Pencils • Calculator • Rubber bands • Large Pink eraser • Takeout food container • Cotton Ball • Terry Cloth • Bubble Wrap: small and large • Foam earplugs • Plastic file folder • Lesson 9 Station Work • Copies of Lesson 6 Assessment • Copies of Lesson 10 Assessment • Copies of Lesson 14 Assessment • Copies of Lesson 15 Assessment
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Unit 2: Sound Waves

Unit Narrative from [OpenSciEd](#)

Driving Question: How can a sound make something move?

Topic	Achieving Grade Level (AT)
When collecting evidence related to these targets, it will be recorded in this topic in Infinite Campus.	The Level 3 Targets are the grade-level expectations for students in all classes. <i>Success Criteria</i> are provided below each target.
<p>Sound Waves 5 Weeks 10/18-11/21</p>	<p>LT2A- Use mathematical representations (data) of a simple wave model to describe how the amplitude and frequency of a wave is related to the sound and energy of a wave.</p> <p>Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Using a graphical representation, explain amplitude of a wave and how it affects sound and energy. Addressed: Lessons 4 and 13 <input type="checkbox"/> Using a graphical representation, explain frequency of a wave and how it affects sound and energy. Addressed: Lessons 4, 5 and 13 <input type="checkbox"/> Construct an argument using evidence from graphs to support an explanation of how amplitude and frequency affect the sound and energy of a wave. Addressed: Lesson 5 <p>LT2B- Develop and use a model to describe how waves interact with a medium.</p> <p>Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Develop a model of how changes in the frequency and amplitude of a wave affect the vibrations of a sound. Addressed: Lesson 10 <input type="checkbox"/> Develop a model supporting how sound requires a medium (solid, liquid and/or gas) to travel. Addressed: Lessons 9, 10, 11 and 14 <input type="checkbox"/> Use a model to explain how a force can impact the energy of a vibration through a medium and make a sound. Addressed: Lesson 13

Resources

[Teams Folder](#)

Need more help? Check out the [Unit Webinar](#) for Teachers

LT2A

Assessment Opportunities

- Lesson 4:** Task part 7, monitor progress tracker (formative)
- Lesson 5:** Exit Ticket, Analyzing Graphs of Sounds Source Vibrations
- Lesson 6:** Harp Assessment, question 5
- Lesson 13:** Sonic Fire Extinguisher Assessment, questions 1-3

LT2B

Assessment Opportunities

- Lesson 1:** Initial model (pre-assessment)
- Lesson 2:** Task Part 6, instrument modeling (formative)
- Lesson 6:** Harp Assessment, questions 1-4 with model rubric
- Lesson 11:** Revised model with modeling rubric
- Lesson 14:** Unit assessment, questions 1-3

Consumable and locally sourced materials

[Review full list of materials here](#)

- Bowl: metal or glass
- Cardboard: large flat
- Charged cell phone
- Clothespin
- Chart Paper or butcher paper
- Guitar or Violin
- Drum w/ drumstick
- Index Cards
- Dark Marker

- Meter Stick
- Colored Pencils
- Rocks: large and small
- Ruler
- Salt
- Sticky dots
- Post-its
- Duct Tape
- Timer
- Xylophone w/mallet
- [Copies of Lesson 6 Assessment](#)
- [Copies of Lesson 11 Assessment](#)
- [Copies of Lesson 13 Assessment](#)
- [Copies of Lesson 14 Assessment](#)

Unit 3: Forces at a Distance

Topic Narrative from [OpenSciEd](#)

Driving Question: How can a magnet move another object without touching it?

Topic	Achieving Grade Level (AT)
<p>When collecting evidence related to these targets, it will be recorded in this topic in Infinite Campus.</p>	<p>The Level 3 Targets are the grade-level expectations for students in all classes. <i>Success Criteria</i> are provided below each target.</p>
<p>Forces at a Distance 6 Weeks 11/27-1/12</p>	<p>LT3A- Develop and use a model to show the cause-and-effect relationships and the energy storage within an electromagnetic system. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify the critical components of an electromagnetic system (power sources, magnet, coil). Addressed: Lessons 1-3 <input type="checkbox"/> Diagram a magnetic field in an electromagnetic system. Addressed: Lessons 4, 5 and 10 <input type="checkbox"/> Identify magnetic forces (repulsion and attraction) interacting at a distance. Addressed: Lessons 4, 7 and 10 <input type="checkbox"/> Recognize how changes to an electromagnetic system (ex: number of magnets, distance, number of coils) affect the potential energy within it. Addressed: Lessons 3, 7, 8, 10 and 11 <p>LT3B- Design an investigation to test the factors that cause changes in the strength of magnetic forces. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify variables (independent, dependent, constant) in an investigation. Addressed: Lessons 7, 8, 10 and 11 <input type="checkbox"/> Develop a hypothesis that includes cause-and-effect framing. Addressed: Lessons 7, 8, 10 and 11 <input type="checkbox"/> Develop a coherent procedure that addresses the hypothesis. Addressed: Lessons 7, 8 and 11 <input type="checkbox"/> Describe how to accurately collect and record the data. Addressed: Lessons 7, 8 and 11 <p>LT3C- Conduct an investigation to test the factors that cause changes in the strength of magnetic forces. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify patterns in organized data. Addressed: Lessons 10 and 11 <input type="checkbox"/> Recognize the relationship between the hypothesis and data. Addressed: Lessons 10 and 11

Resources

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Need more help? Check out the [Unit Webinar](#) for Teachers

LT3A Assessment Opportunities	LT3B Assessment Opportunities	LT3C Assessment Opportunities
Lesson 2: Exit Ticket Lesson 3: Home Learning Lesson 4: Exit Ticket: Day 1 and 2 Lesson 5: Exit Ticket Lesson 6: Midpoint Assessment Lesson 9: Revising Model- Rubric Lesson 12: Summative Assessment	Lesson 7: Investigation Activity Lesson 8: Exit Ticket Lesson 10: Investigating the Effects – A-C Lesson 11: Investigation Plan Lesson 12: Summative Assessment	Lesson 10: Investigating the Effects – C-F Lesson 11: Investigation Plan

Consumable and locally sourced materials

[Review full list of materials here](#)

<ul style="list-style-type: none"> • Scissors • Screwdriver • Colored markers • Penny • Quarter • Scrap paper for exit ticket • 3x5 piece of thick cardboard • Index card • 1 empty 1-L clear soda bottle (optional) • 1L of Mineral oil (optional) • White copy paper • Bricks • Colored pencils 	<ul style="list-style-type: none"> • Crayon or highlighters or markers • Black Markers (for students/DQB) • Box Cutter • Tape, Transparent, 1/2" x 500" • Post-it Notes, 3" x 3" • Post-it® Arrow Flags, 100pk • Labels, Color Coding, 3/4" • Aluminum Foil Roll • Quart freezer Bags • Copies Lesson 6 Assessment • Lesson 7 Assessment • Lesson 11 Assessment • Lesson 12 Assessment
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Unit 4: Earth in Space

Unit Narrative from [OpenSciEd](#)

Driving Question: How are we connected to the patterns we see in the sky and space?

Topic	Achieving Grade Level (AT)
When collecting evidence related to these targets, it will be recorded in this topic in Infinite Campus.	The Level 3 Targets are the grade-level expectations for students in all classes. <i>Success Criteria</i> are provided below each target.
Earth in Space 5 Weeks 1/18-2/23	<p>LT4A- Develop and use a model to describe cyclic patterns of seasons, lunar phases and eclipses in the Earth-sun-moon system.</p> <p>Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"><input type="checkbox"/> Use data to explain how the path that the sun follows across the sky changes over time. Addressed: Lessons 2 and 3<input type="checkbox"/> Explain how the sun’s position in the sky impacts the Earth’s surface (seasons). Addressed: Lesson 4<input type="checkbox"/> Use a model to explain how the pattern of the shape of the moon changes based on its position relative to Earth. Addressed: Lesson 6<input type="checkbox"/> Use a model to explain why we see eclipses at certain times and not others. Addressed: Lesson 7 <p>LT4B- Develop and use a model to describe the role of gravity in the motions within both galaxies and the solar system.</p> <p>Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"><input type="checkbox"/> Describe the relationship between size, distance, and the strength of gravity among objects in the solar system. Addressed: Lesson 14<input type="checkbox"/> Develop a model to describe how gravity organizes matter at various scales. Addressed: Lessons 15 and 16

Resources

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LT4A

Assessment Opportunities

- Lesson 3:** Day 3 Progress Tracker
- Lesson 4:** What Causes the seasons in Australia? (Summative)
- Lesson 6:** Second copy of Initial Model
- Lesson 6:** Day 2: Shape Patter of the Earth-Sun-Moon System
- Lesson 7:** Self-Assessment

LT4B

Assessment Opportunities

- Lesson 13:** Day 2 - Exit Ticket
- Lesson 15:** Comic Book Storyboard
- Lesson 16:** Whole Class discussions (Formative)
- Lesson 17:** Small Group Model (Summative)

Consumable and locally sourced materials

[Review full list of materials here](#)

- Audio player/device
- Headphones (optional)
- Scissors
- Paper, scrap
- Block or book, 1-2 inches thick
- Safety goggles

- [Copies of Lesson 4 Assessment](#)
- [Copies of Lesson 17 Assessment](#)

Unit 5: Genetics

Topic Narrative from [OpenSciEd](#)

Driving Question: Why are living things different from one another?

Topic	Achieving Grade Level (AT)
<p>When collecting evidence related to these targets, it will be recorded in this topic in Infinite Campus.</p>	<p>The Level 3 Targets are the grade-level expectations for students in all classes. <i>Success Criteria</i> are provided below each target.</p>
<p>Genetics 6 Weeks 2/26 – 4/12</p>	<p>LT5A- Construct an explanation using models and math to describe how sexual reproduction results in offspring with genetic variation.</p> <p>Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recognize how an individual’s behaviors influence the development of muscle tissue. Addressed: Lessons 2-4 <input type="checkbox"/> Discuss cause and effect relationships among karyotype, allele, protein, and phenotype. Addressed: Lessons 5 and 6 <input type="checkbox"/> Use simple mathematical models (Punnett squares and pedigrees) to help predict the outcome of known genetic crosses. Addressed: Lesson 8 <input type="checkbox"/> Investigate technologies (selective breeding) that have changed the ways humans influence the inheritance of desired traits.* Addressed: Lesson 9 <p>LT5B- Construct an explanation using a representation of plant reproductive parts and their functions for how these specialized structures support sexual and asexual reproduction in plants.</p> <p>Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain how trait variation can be a continuous range. Addressed: Lesson 11 <input type="checkbox"/> Describe where genetic material can be found in both plant and animal cells. Addressed: Lesson 12 <input type="checkbox"/> Identify significant plant structures and their functions. Addressed: Lesson 13 <p>LT5C- Construct an explanation about how environmental and genetic factors influence the growth of organisms and how organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring.</p> <p>Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Discuss how the genetic information of offspring from asexual reproduction compares to that of the parent. Addressed: Lesson 14 <input type="checkbox"/> Identify the environmental factors that influence the range of trait variation within a species. Addressed: Lesson 15 <input type="checkbox"/> Make a connection between multiple genes’ and the environment’s influence on trait variation. Addressed: Lesson 16

Resources

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LT5A

Assessment Opportunities

- Lesson 2:** Progress Tracker
- Lesson 3:** Progress Tracker
- Lesson 4:** Progress Tracker
- Lesson 5:** Chromosomes in Sex Cells and Karyotype handout
- Lesson 7:** Revised model
- Lesson 9:** Progress Tracker
- Lesson 10:** Goldfish Assessment

***Note:** This success criteria allows for an extension opportunity for additional technologies such as CRISPR, genetic engineering, GMOs, etc.

LT5B

Assessment Opportunities

- Lesson 12:** Extracting Genetic Material & Progress Tracker
- Lesson 13:** Construct an Explanation on Exit Ticket

LT5C

Assessment Opportunities

- Lesson 14:** Asexual reproduction notes & Self-Assessment
- Lesson 15:** Explaining Environmental Factors
- Lesson 16:** Arm Span Reading and Modeling
- Lesson 17:** Redwoods Assessment

Consumable and locally sourced materials

[Review full list of materials here](#)

- Apple, fresh
- Chart paper
- Flower, fresh
- Glue Stick
- Ice
- Marker, dark color
- Marker, Permanent black
- Pea pod, fresh
- Red or green pepper, fresh
- Scissors

- Strawberry, fresh
- Strawberry, frozen
- Apron, non-latex
- Paper, copy, white
- Safety goggles
- [Copies of Lesson 10 Assessment](#)
- [Copies of Lesson 14 Assessment](#)
- [Copies of Lesson 17 Assessment](#)

Unit 6: Natural Selection and Ancestry

Unit Narrative from [OpenSciEd](#)

Driving Question: How could things living today be connected to the things that lived long ago?

Topic	Achieving Grade Level (AT)
<p>When collecting evidence related to these targets, it will be recorded in this topic in Infinite Campus.</p>	<p>The Level 3 Targets are the grade-level expectations for students in all classes. <i>Success Criteria</i> are provided below each target.</p>
<p>Natural Selection and Ancestry 7 weeks 4/25 – 5/24</p>	<p>LT6A- Apply scientific ideas to construct an argument supported by evidence and reasoning of anatomical similarities and differences that explains how organisms that lived long ago are ancestors to modern organisms. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Interpret the fossil record for patterns. Addressed: Lessons 2, 3, 4 and 5 <input type="checkbox"/> Compare differences between modern living organisms and fossilized organisms. Addressed: Lesson 2, 3, 5 and 13 <input type="checkbox"/> Explain what happened to ancient species. Addressed: Lesson 1, 4, 5 and 13 <p>LT6B- Construct an explanation based on evidence that describes how genetic variation of traits in a population increases some individuals' probability of surviving and reproducing in a specific environment. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Describe how mutations in an individual may result in genetic variation in a population. Addressed: Lessons 7, 8, 12 and 13 <input type="checkbox"/> Describe the cause-and-effect relationship between an organism's survival and its inheritance of different traits. Addressed: Lessons 7 and 8 <p>LT6C- Construct an explanation based on evidence collected from a simulated environment and models for how small changes in an environment can cause large changes in a population over time. Learning that shows evidence of progressing towards grade-level learning target (success criteria):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gather evidence in a simulated environment. Addressed: Lessons 9 and 10 <input type="checkbox"/> Make connections between data that was gathered and ideas from the General Model of Natural Selection.* Addressed: Lessons 9 and 10

Resources

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LT6A	LT6B	LT6C
<p style="text-align: center;">Assessment Opportunities</p> <p>Lesson 4: Exit Ticket (Formative)</p> <p>Lesson 6: “How are penguins today connected to penguins from long ago?” Argument and Self-Assessment</p> <p>Lesson 13: Ancient and Modern Penguins Explanation</p>	<p style="text-align: center;">Assessment Opportunities</p> <p>Lesson 8: Exit Ticket (formative)</p> <p>Lesson 11: Anole Explanation</p> <p>Lesson 13: Ancient and Modern Penguins Explanation</p>	<p style="text-align: center;">Assessment Opportunities</p> <p>Lesson 10: My Model for Changes in Bacteria Populations</p> <p>Lesson 11: Anole Explanation</p> <p>*General Model for Natural Selection – Please view</p>

Consumable and locally sourced materials

[Review full list of materials here](#)

<ul style="list-style-type: none"> • Chart Paper • Index Cards • Dark Marker • Meter stick • Paper clip • Paper: Assorted Colors • Butcher Paper • Sticky dot • Sticky note • Sticky Tack • Tape • Timer 	<ul style="list-style-type: none"> • Penguin Stickers* • Horse Stickers* • Horseshoe crab Stickers* • Whale stickers* • Copies of Lesson 4 Assessment • Copies of Lesson 6 Assessment • Copies of Lesson 8 Assessment • Copies of Lesson 10 Assessment • Copies of Lesson 11 Assessment • Copies of Lesson 13 Assessment <p style="text-align: right; font-size: small;">*Printed and delivered from Print Shop each year</p>
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