**This advisory recommendation has not been approved by the Instructional Quality Commission or the State Board of Education.**

# REVIEW PANEL ADVISORY RECOMMENDATION2018 SCIENCE ADOPTION OF INSTRUCTIONAL MATERIALS

| **Publisher** | **Program** | **Grade Level(s)** |
| --- | --- | --- |
| Impact Science Education, Inc. | Impact Science: Integrated Middle School Program for CA NGSS | 6–8i |

## Program Summary:

Impact Science: Integrated Middle School Program for CA NGSS includes: Impact Science Middle School Program for CA NGSS includes: (U) = Unit (L) = Lesson.

## Recommendation:

Impact Science: Integrated Middle School Program for CA NGSS is recommended for adoption for 6–8i because the instructional materials include content as specified in the Next Generation Science Standards for California Public Schools (CA NGSS) and meet all the criteria in Category 1 with strengths in categories 2–5.

## Criteria Category 1: Alignment with the CA NGSS Three-Dimensional Learning

The program includes content as specified in the CA NGSS and includes a well-defined sequence of instructional opportunities that provides a path for all students to become proficient in all grade-level performance expectations.

**Citations:**

* Criterion #1: Grade 6: MS-ESS2-6, U4 Climate, L9 pp.4-6 and L10 pp.3-6; MS-ETS 1-1 U2 Thermal Energy L14 pp.1-13; MS-ETS1-3 U5 Climate Change L13 pp.6-7; Grade 7: MS-LS2-3, U7 Ecology L13 pp.2-3, 5; MS-PS1-1, U4 Elements and Compounds L6 pp.1-6 and L6 Resource pp.1-4, MS-PS1-6, U5 Physical and Chemical Change L10 pp.2-3 and L13 pp.3-4; Grade 8: MS-ESS1-1 U6 Earth’s Place L2 pp.1-8 and L3 pp.1-8, MS-ESS1-4 U7 Geologic Time Scale L8 pp.1-5, MS-ETS1-1 U3 Kinetic Energy and Potential Energy L8 pp.3 and L12 pp.6-8. The program provides numerous examples of the standards being fully covered.
* Criterion #7: Grade 6, U7 Climate, L1 p.1. This is an example for how the instructional resources use of primary sources, such as scientific research, case studies, and photographs, are integrated into the three-dimensional learning, as grade-level appropriate.

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* Criterion #9: Grade 7, U2 Earth Systems, L18 pp.3-7. Instructional resources focus on the application of science to be learned (e.g., medicine, engineering, environmental science) using authentic and meaningful real-world applications and scenarios that are specific to California when appropriate.
* Criterion #15, Grade 8, Unit 9 Human Impact Lesson 10, pp.P1-P7. The program contains examples of institutional resources that, where appropriate, examine humanity’s place in ecological systems and the necessity for the protection of the environment (EC Section 60041). Resources include instructional content based upon the environment principles and concepts developed by the California Environmental Protection Agency and adopted SBE (Public Resource Code Section 71301) in the context and aligned to the CA NGSS, exemplified in Appendix 2.

## Criteria Category 2: Program Organization

The organization and features of the instructional materials support instruction and learning of the CA NGSS.

**Citations:**

* Criterion #4: Grade 7, U5, L9, pp.2-6. The program contains an exemplar where teacher resources provide support to engage students in three-dimensional learning suggesting a research-based strategy to elicit student thinking and support student discourse.
* Criterion #5: Grades 6-8, Chart of Units, Grade 7, U2, Unit Planning Chart, Grade 6, Unit 2, Lesson 11, pp.1-5. The Chart of Units clearly defines the instructional content for 180 days for each grade level. Grade 7 is an exemplar of a unit clearly showing a 30 day component of the 180 days, and grade 6 provides a good example of the estimate of instructional time designated for each of the 5E components for a given lesson.
* Criterion #8: Grade 6, U2, Each grade level provides at least one unit with a topic that has been selected for in-depth study. Grade 6 provides an exemplar of a well-developed sequence of lessons that supports students in building the knowledge and abilities needed to achieve proficiency.
* Criterion #13: Grade 8, U8, Evolution Unit Overview, pp.1-2. We found evidence that the course descriptions outlined in the Unit Overviews are aligned to a specific progression of courses across each grade band so that students completing the course sequence can meet all grade band CA NGSS PE’s and is an exemplar showing a planned sequence that builds progressively on prior learning with the logic of the progression clearly explained in the overview.
* Criterion #5: Grade 7, Unit 2, Unit Planning Chart. The program’s chart is an exemplar of a unit clearly showing a 30 day component of the 180 days, and grade 6 provides a good example of the estimate of instructional time designated for each of the 5E components for a given lesson.
* Criterion #8: Grade 6, Unit 2. Unit 2 within the program provides an exemplar of a well-developed sequence of lessons that supports students in building the knowledge and abilities needed to achieve proficiency.

## Criteria Category 3: Assessment

The program includes multiple models of both formative and summative assessment tasks for measuring what students know and are able to do and provides guidance for teachers on how to use scoring rubrics and interpret assessment results to guide instruction.

**Citations:**

* Criterion #7: Grade 6, U2, Thermal Energy Summative Assessment. Summative assessments are designed to provide valid, reliable and fair measures of students' progress and attainment of three-dimensional learning after a period of instruction.
* Criterion #8: Grade 8, U9, Human Impact L10. Students’ progress toward meeting the three-dimensions of the CA NGSS is assessed through both writing and performance tasks. Student written responses are consistent with the grade-level writing and mathematics requirements in the CA CCSS for ELA/Literacy and the CA CCSSM.
* Criterion #10: Grade 7, U5, Physical & Chemical Changes, L10-15. Assessment tools include multiple measures of student performance as addressed in the assessment chapter in the CA Science Framework, including, but not limited to, engineering design and lab practical tasks; performance-based tasks; open-ended, short answer and essay responses; lab reports; research projects; computational simulations; and oral presentations.
* Criterion #11: Grade 8, U8, L17, Resource-How to Evaluate Website; L17 Project Rubric. There is evidence that assessment tools include guidance on measuring students’ ability to apply information literacy skills when obtaining and evaluating information about science topics.

## Criteria Category 4: Access and Equity

Program materials ensure universal and equitable access to high-quality curriculum and instruction for all students and provide teachers with suggestions for differentiation for students with special needs.

**Citations:**

* Criterion #1: Grade 7, U6 Respiration and Photosynthesis, L8 p.7. Instructional resources reflect the goals of access and equity outlined in Chapter 10 of the CA Science Framework.
* Criterion #2 Grade 8, U4 Electricity and Magnetism, L11 p.4. Suggested lessons and teacher resources include research-based strategies to address the needs of English learners consistent with the CA ELD Standards.
* Criterion #3 Grade 6, Unit 6 Weather, Lesson 7 p.5. Instructional resources incorporate instructional strategies to address the needs of students with disabilities in lessons, assessments, and teacher resources, as appropriate, at every grade level.

## Criteria Category 5: Instructional Planning and Support

The instructional materials provide coherent guidelines for teachers to follow when planning three-dimensional instruction and are designed to help teachers provide effective standards-based instruction.

**Citations:**

* Criterion #1: Grades 6-8, ISE/INT Chart of Units. The program shows strength with the teacher materials containing a curriculum guide for the academic instructional year allowing teachers to plan for 180 days of instruction.
* Criterion #2: Grade 7, Unit 2: Lesson 3: p.2. The program contains examples with the teacher materials including estimated instructional time for each activity, lesson, and unit.
* Criterion #7: Grade 8, Unit 8: Lesson 4: Student Pages and Reading. The program shows strength with the student resources being embedded in the teacher’s guide and with the corresponding file names by lesson number.
* Criterion #10: Grade 6, Unit 3: Lesson 1: pp.1-3. The program contains evidence of the teacher materials and student resources providing experiences that build to the development of learning goals without explicitly stating those goals prior to instruction.
* Criterion #17: Grade 7, Unit 2: Lesson 15: p.6. The program contains evidence of suggested homework tasks, including interviewing people outside of the class which supports student learning through shared experiences with others.

## Edits and Corrections:

The following edits and corrections must be made as a condition of adoption:

| # | Grade Level | Component | Page Number(s) | Current Text | Proposed Corrected Text | Reason for Edit |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | 6 | Unit 6 Overview | 2 | (bacteria, protists, viruses, and fungi can divide…) | Replace ‘divide’ with ‘can reproduce’… | Simple factual errors |
| 2 | 6 | Unit 6 Lesson 22 Reading | 1 | The other kind of cell division…A cell splits in half, and each half cell can later combine with a half cell from another individual to produce a complete cell that a baby grows from. | The other kind of cell division…This division generates cells that have half the number of chromosomes as compared to a regular body cell. Later, a reproductive cell from the female will merge with the reproductive cell of a male, to produce a cell with a complete set of chromosomes. The baby will grow from the merged cell. | Simple factual errors |
| 3 | 6 | Unit 6 Lesson 17 | 2 | The body breaks down the food or fat from our bodies and releases a steady flow of glucose into the bloodstream for our cells to use for energy. LS1.A: Structure and Function. Tell students this breakdown process happens in cell structures called mitochondria. | The body breaks down the food or fat from our bodies and releases a steady flow of glucose into the bloodstream for our cells to use for energy. LS1.A: Structure and Function. Tell students that glucose breakdown involves cell structures called mitochondria | Simple factual errors |
| 4 | 6 | Unit 6 Lesson 17 | 2 | Get energy Chloroplasts meet the energy needs of plant cells and plant-like cells; students might wonder how animal cells get energy. | Chloroplasts provide energy for plant cells. Students might wonder how animal cells get energy. | Simple factual errors |
| 5 | 6 | Unit 8 Lesson 4 | 4 | For each pair of traits, which one is most common in your class? The trait listed first is the dominant trait. | For each pair of phenotypes, which one is most common in your class? The more common phenotype is often (not always) the dominant phenotype. | Simple factual errors |
| 6 | 6 | Unit 8 Lesson 5 | 5 | Some traits like wings, a long tail, or large size seem obviously beneficial. Students can explain why they think this. | Delete | Imprecise definition |
| 7 | 6 | Unit 8 Lesson 6 | 5 | Then when these peas (Yy) are crossed you will get offspring that are 75% yellow and 25% green peas. | Then when these peas (Yy) are crossed you will get offspring that are about 75% yellow and 25% green peas. | Simple factual error |
| 8 | 6 | Unit 5 Lesson 7 | 2 | Fossil fuels​ are defined as the fossilized remains of plants and animals | Fossil fuels​ are the organic matter from the remains of plants and animals | Imprecise definition |
| 9 | 6 | Unit 5 Lesson 7 | 2 | As a note: CO2 is considered a harmful greenhouse gas because it contributes to the greenhouse effect and contributes to climate change. It is sometimes referred to as Carbon pollution. This is accurate as it is produced by humans and is harmful (even though it is a natural gas). | As a note: Although CO2 is naturally produced by all organisms and is essential for maintaining a hospitable temperature on Earth, at above certain levels, CO2 is considered a harmful greenhouse gas, or ‘carbon pollution’ which contributes to climate change. | Imprecise definition |
| 10 | 6 | Unit 3 Lesson 3 | 1 | Observing ice tells us that water molecules form a tight bond when they freeze, and this bond is hard to break. The fact that drops of water stick together tells us that water molecules are magnetic. | Observing ice tells us that water molecules form a tight bond when they freeze, and this bond is harder to break. The fact that drops of water stick together tells us that water molecules are attracted to one another. | Simple factual error |
| 11 | 6 | Unit 8 Traits and Survival Summative Assessment, Item 2 | 1 | Two male deer often fight using their antlers in order to get the chance to mate with a female. Explain why female deer mate with the winner of the fight. **Answer**: Answers may vary. Sample: Female deer want to mate with the winner of the fight because that male is often larger, stronger, and more aggressive than the other male. These are dominant traits that are advantageous for the deer to have in order to pass on their traits to the next generation. The female deer wants her offspring to have these dominant traits. | **Answer**: Answers may vary. Sample: Female deer has a better chance to mate with the winner, and therefore pass on the traits of the winner to their offspring. | Simple factual error |
| 12 | 7 | Unit 6 Overview | 1 | The cracker will keep the flame burning for some time, indicating that it contains some type of fuel: sugar | The cracker will keep the flame burning for some time, indicating that it contains some type of fuel: starch. | Simple factual error |
| 13 | 7 | Unit 6 Lesson 13 | 5 | Photosynthesis involves plants taking in water and CO2 while they create sugar and O2 Cellular respiration does the exact opposite: animals take in sugar and O2 to make energy and convert these into water and CO2. | Photosynthesis involves plants taking in water and CO2 while they create sugar and O2. Cellular respiration does the exact opposite: cells take in sugar and O2 to make energy and convert these into water and CO2 | Simple factual error |
| 14 | 7 | Unit 6 Lesson 7 Reading | 1 | These algae are a useful energy source because they, unlike plants, “bloom” in many different habitats: making them an extremely reliable source to attract energy | These algae are a useful energy source because they grow in many different habitats: making them an extremely reliable source to attract energy | Simple factual error |
| 15 | 7 | Unit 6 Lesson 7 | 1 | Opener:…Of course people would also need to eat sugars which would give the body energy for their workout. This is cellular respiration. | ,…Of course people would also need to eat sugars which would breakdown in order to give the body energy for their workout. This process is cellular respiration. | Imprecise definition |
| 16 | 7 | Unit 6 Lesson 7 | 4 | (cellulose) cannot be used as energy because the glucose molecules are wound too tightly together. | (cellulose) cannot be used as energy because our body does not have the means (enzymes) to break down cellulose into glucose units. | Simple factual error |
| 17 | 7 | Unit 6 Lesson 7 | 3 | If a food is from a plant, and it is a seed (nut or bean or pea), then it is likely to be mostly protein. | If a food is from a plant, and it is a seed (nut or bean or pea), then it is often rich in (made of) protein. | Imprecise definition |
| 18 | 7 | Unit 7 Lesson 5 | 2 | One organism lives on another but the other organism isn’t bothered or affected, such as barnacles on a whale. This is mutualism that is one-sided | One organism lives on another but the other organism isn’t bothered or affected, such as barnacles on a whale. This is commensalism that is one-sided | Imprecise definition |
| 19 | 7 | Unit 6 Lesson 7 | 2 | Fats are another type of molecule which has several functions (energy storage) | Fats are another type of molecule which has several functions (e.g. building membranes, energy storage) | Imprecise definition |
| 20 | 8 | Unit 8 Lesson 15 | 1 | The chromosomes are a bundle of all the DNA: these bundles called chromosomes are found in the nuclei of all cells. | The chromosomes are made of the entire DNA of an organism. These bundles of DNA, called chromosomes, are found in the nuclei of all cells (except for prokaryotes) | Imprecise definition |
| 21 | 8 | Unit 8 Lesson 15 | 1 | Students will understand the role of mutations in creating variation (that can be inherited) in populations, however they will understand and model that this process is random and very slow. | Students will understand the role of mutations in creating variation (that can be inherited) in populations. Students will understand and model that this process is random and very slow. | Imprecise definition |
| 22 | 8 | Unit 8 Summative Assessment, Item 2, Part A | 1 | Which of the following statements describes how the initial white-eyed fly received its white eyes? A. The fly’s eyes were damaged in the lab and turned white. B. The gene for white eyes was inherited from the parent. C. The eye color gene in the fly’s DNA mutated. D. The fly was born blind due to the environment. **Answer: C** | Answer B is also correct | Simple factual error |
| 23 | 6-8 | Program Overview | 11 | The lesson plan includes differentiation notes….and students with learning differences (SLD). | The lesson plan includes differentiation notes….and students with special learning disabilities (SLD). | Grammatical errors or misspellings |
| 24 | 6 | Unit 1 Lesson 8 | 4 | The data supports/disproves my question | The data supports/disproves my prediction (or claim, hypothesis) | Grammatical errors or misspellings |
| 25 | 6 | Unit 1 Lesson 8 | 3 | The metric system makes math and comparison a little easier to remember. | The metric system makes calculations and conversions much easier to do. | Grammatical errors or misspellings |
| 26 | 6 | Unit 6 Lesson 24 | 3 | When a chromosome is changed, the instructions that that chromosome carries may also be changed, impacting the function of the cell. | When a chromosome is changed, the instructions that the chromosome carries may also be changed, impacting the function of the cell. | Grammatical errors or misspellings |
| 27 | 6 | Unit 7 Lesson 16 | 2, Body Systems | SLD If students are having trouble with the Opener, they my need more information. | SLD If students are having trouble with the Opener, they might need more information. | Grammatical errors or misspellings |
| 28 | 6 | Unit 8 Lesson 2 | 2 | Short nature videos about weird and interesting species showing traits that animals have that help with survival. | Show short nature videos about weird and interesting species showing traits that animals have that help with survival. | Grammar – No verb in sentence |
| 29 | 6 | Unit 3 Lesson 5 | 6 | Which temperature of water evaporated the fastest? | Under which temperature conditions was water evaporation the fastest? | Grammatical errors or misspellings |
| 30 | 6 | Unit 3 Lesson 7 | 4 | steam from beaker is evaporation, water that collects on the cookie sheet is condensation, and the droplets combining into drops that fall on the tray below are precipitation. | steam indicates evaporation, water that collects… indicates condensation and droplets combining into drops represent precipitation. | Grammatical errors or misspellings |
| 31 | 7 | Unit 6 | 1, Overview | In the previous unit, students learned about why species might become endangered, and how we could address the problem. | In the previous year, students learned about why species might become endangered, and how we could address the problem. | There is no previous unit in grade 7 about endangered species. |
| 32 | 7 | Unit 6 Planning Chart Lesson 3  | Activity | Food (glucose) is used in order for energy to be released through the process of cellular respiration. | Students will investigate burning saltine crackers as a model for energy released during respiration. | Grammatical errors or misspellings |
| 33 | 7 | Unit 7 Lesson 9 | 5 | These populations had been too high, but after wolves were more likely to return to their more stable levels. | The herbivore populations had been too high, but after wolves were introduced, the herbivores were more likely to return to their more stable levels. | Grammatical errors or misspellings |
| 34 | 7 | Unit 7 Lesson 9 | 5 | If a predator catches a rodent that has eaten poison, the predator my die. This will result in an overall increase in the number of rodents. | If a predator catches a rodent that has eaten poison, the predator might die. This will result in an overall increase in the number of rodents. | Grammatical errors or misspellings |
| 35 | 7 | Unit 2 | 1, Earth’s System Overview | examining the forces that shape geological features and drive the rock transformation processes that students just explored. | examining the forces that shape geological features and drive the processes that transformed the rocks that students just explored. | Grammatical errors or misspellings |
| 36 | 7 | Unit 2 | 1, Earth’s System Overview | as students consider the potential cause for this clear boundary area where magma is often near to the surface causing volcanic activity, and earthquakes show us movement in the Earth’s crust. | as students consider the potential cause for this clear boundary area where magma is often seen as a result of volcanic activity, and earthquakes show us movement in the Earth’s crust | Grammatical errors or misspellings |
| 37 | 7 | Unit 8 Lesson 2 | 5 | Why was these changes needed? | Why were these changes needed? | Grammatical errors or misspellings |
| 38 | 7 | Unit 7 Lesson 18 Reading | 1 | Walking between the City Slicker’s West Oakland Farm Park is like exploring a food forest. | Walking along the City Slicker’s West Oakland Farm Park is like exploring a food forest. | Grammatical errors or misspellings |
| 39 | 7 | Unit 2 Lesson 14 | 6 | Several have students rereading some of the articles from the unit. | Have students reread some of the articles from the unit. | Grammatical errors or misspellings |
| 40 | 6 | Unit 7 Lesson 14 | 6 | Eyes need to be disposed of, tables cleaned, and hands washed. | Eyes need to be disposed of according to the local enforcement agencies (LEA) regulations, tables cleaned, and hands washed | Grammatical errors or misspellings |
| 41 | 6 | Unit 7 Lesson 16 Reading | 1 | As you can see in the photo of the neuron, they have lots of branches reaching out to communicate with each other. | Figure shows a whole body but not neurons. | Mislabeled pictures or objects |
| 42 | 7 | Unit 7 Lesson 4 | 2 | Predator Prey simulation: There is no reproduction or death of the predator | Adjust simulation to affect predator population. | Mislabeled pictures or objects |
| 43 | 7 | Unit 7 Lesson 13 | 2 | Food Web of a tropical ecosystem – No arrows into detrivores (taken from Wikimedia) | Draw arrows from plant to detrivores. | Mislabeled pictures or objects |
| 44 | 7 | Unit 4 Lesson 1 | 4 | There is a FIGURE with three circles, matter, containing elements, containing atoms. | Provide reasoning for placing items in figure. | Mislabeled pictures or objects |
| 45 | 6 | Unit 8 Traits and Survival | 1, Summative Assessment, Item 3 | Large birds such as hawks and eagles often eat rabbits. **The images below** represent the population sizes of light-brown and dark-brown rabbits in a given area over the course of five years. During this time a drought was occurring, and the area received little to no rainfall. | You need to explain what is the relationship between the three terms, and why they are drawn this way. | Mislabeled pictures or objects |
| 46 | 7 | Unit 4 Elements and Compounds | Pre-assessment, Item 1, Part B | Diamond and graphite (pencil “lead”) are both made of carbon atoms. **FIGURE** Write a sentence comparing the carbon atoms in these two materials.Answer: Answers will vary. The atoms are exactly the same. They are just arranged in different ways. | Add valence electrons to graphite, to show four electrons in outer shell of any carbon. | Mislabeled pictures or objects |
| 47 | 8 | Unit: 8 Lesson 3 | 1 | How this trait (beak shape) changes over time. | How the proportion of birds with certain variations of the beak shape trait changes overtime (between generations) | Language precision to avoid reinforcing misconception |
| 48 | 8 | Unit: 8 Lesson: 3 | 3 | Our simulation today will be about how different beaks are better at eating different kinds of foods. | Our simulation today will be about how different beaks are better at eating different kinds of foods. The birds inherited beaks suited for food they specialize in eating. | Language precision to avoid reinforcing misconception |
| 49 | 8 | Unit: 8 Lesson: 4 | 2 | These clams are all different colors/shades | These clams of the same species are all different colors/shades | Language precision to avoid reinforcing misconception |
| 50 | 8 | Unit: 8 Lesson: 4 | 2 | We will review the terms dominant alleles, recessive alleles, genotypes, and phenotypes. | We will review the terms students learned in 6th grade, dominant alleles, recessive alleles, genotypes, and phenotypes. | Students have not learned yet |
| 51 | 8 | Unit: 8 Lesson: 4 | 1 | This is because they are one of nature’s best examples of Darwin’s theory of evolution by natural selection. | Deletion. | Language precision to avoid reinforcing misconception |
| 52 | 8 | Unit: 8 Lesson: 5 | 1 | They will also see how the alleles and genotypes for this trait change in response to the success of this physical trait. | They will also see how the proportion of alleles in the population change between generations in response to the successful survival & reproduction of those with certain “successful” traits. | Language precision to avoid reinforcing misconception |
| 53 | 8 | Unit: 8 Lesson: 5 | 1 | This simulation shows how populations that change over time and develop different traits. | This simulation shows a population changing between generations and the emergence of a new trait because of a genetic mutation. | Clarification |
| 54 | 8 | Unit: 8 Lesson: 5 | 5 | The technical definition of evolution is a change in alleles in a population over time. | The technical definition of evolution is a change in allele frequency in a population over time. | Incorrect definition |
| 55 | 8 | Unit: 8 Lesson: 5 | 5 | …because of the predator. | ...because the expression of the allele allows for success (survival and reproduction) of individuals with that variant in that environment at that time. This example shows a reduction in the other variant due to predation and thus lack of survival and reproduction. | Language precision to avoid reinforcing misconception |
| 56 | 8 | Unit: 8 Lesson: 10 reading | 1 | Horses changed over time: based on the fossil evidence, they got larger as you can see in the diagram. The early Eocene horse was adapted to a forest-like habitat that was dominant when these fossils were found. However, the environment changed slowly; the vegetation changed from a forest to a grassland over several million years. Small horses can easily hide in the forest; but as the forest changed and slowly turned into grasses, horses evolved to do better in the new environment. Over time, horses changed their diet from being browsers (eating whole branches, leaves, stems, etc.) to eating just grass.  | Horses changed over time: based on the fossil evidence, they got larger across generations as you can see in the diagram. The early Eocene horse population was adapted to a forest-like habitat that was dominant when these fossils were found. However, the environment changed slowly; the vegetation shifted from a forest to a grassland over several million years. Small horses can easily hide in the forest; but as the forest changed and slowly turned into grasses, horses evolved to survive their changing environment.  | Language precision to avoid reinforcing misconception |
| 56 cont | 8 | Unit: 8 Lesson: 10 reading | 1 | They evolved to have features and behaviors that were beneficial in the new grasslands environment. | The fossil record shows this change by documenting changes to their molars which indicate their diet shifted from being browsers (eating whole branches, leaves, stems, etc.) to eating just grass. The fossil record also shows the reduction inside toes and the middle toe evolving into a single large hoof which is beneficial for survival in the new grasslands environment. | See above |
| 57 | 8 | Unit 8 Lesson 15 Reading | 1 | Eventually, what began as an unintentional process of natural selection turned into an intentional process of selective breeding. | Eventually, what began as an unintentional process of natural selection turned into an intentional process of selective breeding *(artificial selection).* | Imprecise definition |
| 58 | 8 | Unit 8 Lesson 12 | 2 | EL Also refer to common meaning- to adapt to changes in one’s life or environment within a single lifespan. In the context of “evolutionary biology” this doesn’t happen; the adaptations are developed over a long period of time because they are advantageous for survival. | EL Also refer to common meaning- to adapt to changes in one’s life or environment within a single lifespan. In the context of “evolutionary biology” this doesn’t happen; the adaptations arise in a population over a long period of time because they are advantageous for survival. | Language precision to avoid reinforcing a misconception |
| 59 | 8 | Unit 8 Lesson 12 | 6 | Explain that traits that are beneficial are called adaptations. This means that the trait has evolved through natural selection and provides a benefit for the organisms in either survival or mating/ reproduction. | Explain that traits that are beneficial in a population are called adaptations. This means that the trait has evolved in the population through natural selection and provides a benefit for the organisms in either survival or mating/ reproduction. | Language precision to avoid reinforcing a misconception |
| 60 | 8 | Unit 8 Lesson 13 | 1 | These dinosaurs were very diverse and had several good adaptations when they lived on the earth, yet they went extinct. | Populations of dinosaurs had strong genetic variation and were adapted to the environments they live in, yet they went extinct. | Language precision to avoid reinforcing misconceptions. |
| 61 | 8 | Unit 8 Lesson 13 | 3 | There is no correct answer; students should use the evidence to make a determination. | Students should use the evidence to make a determination. | Language precision |
| 62 | 8 | Unit 8 Lesson 13 | 3 | Teacher note: Often a radical change in the environment or a catastrophe has been involved in many extinctions. | Teacher note: Often a rapid change in the environment or a catastrophe has been involved in many extinctions as there is not enough generation time for populations to adapt. | Language precision to avoid reinforcing misconceptions. |
| 63 | 8 | Unit 8 Lesson 13 | 3 | Species that have gone extinct often have good adaptations and are unlucky or in the wrong place at the wrong time. | Species that have gone extinct often have good adaptations for the current environmental conditions, but when the environment changes too rapidly the population is unable to adapt ––they are in the wrong place at the wrong time. | Language precision to avoid reinforcing misconceptions. |
| 64 | 8 | Unit 8 Lesson 13 | 3 | But in other cases, organisms accumulate adaptations that end up not serving them well (for whatever reason). | But in other cases, populations accumulate adaptations that end up not serving them well (for whatever reason). | Language precision to avoid reinforcing misconceptions. |
| 65 | 8 | Unit 8 Lesson 13 | 3 | What are different possible hypotheses for answering the above question? What is evidence for each of these hypotheses? | What are different possible explanations for answering the above question? What is evidence for each of these explanations? | Incorrect use of hypothesis |
| 66 | 8 | Unit 8 Lesson 13 | 4 | Ask: ​Why did the early horse groups go extinct? Climate change and the forests changed into grasslands; as such, the early horses could not survive in this new habitat. | Ask: ​Why did the early horse groups go extinct? Climate change and the forests changed into grasslands; as such, the early horses did not have trait variants favorable to surviving the shifting environment. Only offspring with trait variants favorable to the changing conditions survived and reproduced, and the population evolved over time as these variations accumulated.  | Language precision to avoid reinforcing misconceptions. |
| 67 | 8 | Unit 8 Lesson 13 | 4 | Answers will vary. There is not one correct answer here, but several hypotheses. One idea is that they are very well adapted and have not needed to change. Another idea is that their environment has been very stable, so it has not encouraged any evolutionary change. | Answers will vary. There is not one correct answer here, but several explanations. One idea is that they are very well adapted and thus no change is evident. Another idea is that their environment has been very stable, so there is no selection acting on the population.  | Language precision to avoid reinforcing misconceptions. |
| 68 | 8 | Unit 8 Lesson 15 | 1 | They do not happen very often and usually they have a negative or neutral (no) effect on the organism. Mutations can sometimes change the protein (the structure of the protein directly affects how it functions), and thus can cause a new trait in organisms. | They do not happen very often and usually they have no effect on the organism (are neutral). Sometimes, mutations are beneficial or harmful. Mutations can sometimes change the protein (the structure of the protein directly affects how it functions), and thus can cause a new trait in organisms. | Incorrect statement |
| 69 | 8 | Unit 8 Lesson 15 | 2 | Which will evolve faster: mice or elephants? Mice will evolve faster because they have shorter lifespans and more offspring at one time. There is more chance for variation. | Which will evolve faster: mice or elephants? Mice will evolve faster because they have faster generation time and more offspring at one time. Variation accumulates faster. | Incorrect statement |
| 70 | 8 | Unit 8 Lesson 15 | 2 | So if there is a mutation, there is a trait that is not present or altered by this mutation. | Remove sentence | Remove sentence |
| 71 | 8 | Unit 8 Lesson 15 | 2 | They will guess whether these new traits (caused by the mutations) are beneficial, harmful, or neutral (will have no effect) on either survival or mating or reproduction. | They will guess whether these new traits (caused by the mutations) are beneficial, harmful, or neutral (will have no effect) on either survival or reproductive success. | Clarification |
| 72 | 8 | Unit 8 Lesson 15 | 7 | In most cases, the protein doesn’t function when there is a mutation. | In most cases, the protein doesn’t function normally when there is a mutation. | Clarification |
| 73 | 8 | Unit 8 Lesson 16 | 1, 2 | Artificial selection is a type of natural selection with the main difference being that humans are doing the selecting intentionally. | Artificial selection is a type of selection where humans are doing the selecting intentionally. | Clarification |
| 74 | 8 | Unit 8 Lesson 17 | 1 | This is counter to natural selection because the changes are made intentionally by humans and these organisms may or may not be able to pass on these traits successfully to offspring. | This is artificial selection because the changes are made intentionally by humans. Because of how this type of artificial selection is done, these organisms may or may not be able to pass on these traits successfully to offspring. | Clarification |
| 75 | 8 | Unit 8 Lesson 17 | 4 | Genetic engineering involves moving a gene from one organism into a second organism so that it can have the protein that the gene codes for | Genetic engineering can involve moving a gene from one organism into a second organism so that it can have the protein that the gene codes for | Clarification |
| 76 | 8 | Unit 8 Lesson 11  | 3 | It indicates that this new trait evolved here. | Delete sentence | Incorrect |

## Social Content Citations:

The panel identified the following social content violations:

| # | SC Code | Grade Level | Component | Page Number(s) | Current Text | Proposed Corrected Text | Reason for Citation |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | L.1. | 8 | SRB | 50 | Picture of car crashing into wall | Change drawing to a more generic car. It is too obvious that the car in the picture is a “Smart” Car | Brand Names/Corporate Logo |
| 2 | L.1. | 6 | Unit 7 Lesson 4 | n/a | Image of runners with Nike tops and AG Insurance bibs | Remove or blur brand names | Brand names/ corporate logos |
| 3 | L.1. | 7 | Unit 4 Lesson 12 | n/a | Image of DuPont | Remove or blur brand name | Brand names/ corporate logos |
| 4 | L.1. | 7 | Unit 4 Lesson 12 | n/a | Gore-tex and Rubik | Remove brand names from text | Brand names/ corporate logos |

California Department of Education, August 2018