| *Topic:* Biology    *Date*:  *Teacher:*  *Grade:*  *Class length:* |
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| Essential Question(s):   1. Why are all life forms connected through their structure and function? 2. Why does an organism evolve? 3. What evidence is there to support the theory of evolution? 4. What role does the environment play in an organism's survival and reproduction? | Learning outcomes/objectives:  By the end of the lesson, students will be able to:   1. Describe how an animal has adapted characters that allow it to fit into its environment. 2. Describe how character states allow organisms to survive and reproduce. |
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| Standards:  Massachusetts:   * HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence, including molecular, anatomical, and developmental similarities inherited from a common ancestor (homologies), seen through fossils and laboratory and field observations. * HS-LS4-2 Construct an explanation based on evidence that Darwin’s theory of evolution by natural selection occurs in a population when the following conditions are met: (a) more offspring are produced than can be supported by the environment, (b) there is heritable variation among individuals, and (c) some of these variations lead to differential fitness among individuals as some individuals are better able to compete for limited resources than others. |
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| Materials and Resources: (attached if applicable)   * Simulation   + Google Form included * Evolution PowerPoint   + Of your choosing, simulations work with all textbook evolutionary material | Formative Assessments:   * Google Form * Simulation Game * Warm Up * Exit Ticket |
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| Warm-up/Activator: (5 minutes)  \*Located on the Simulation page in Educator Resource Section     * Students will answer a Google Form   + Will ask students to create their definition of natural selection and the primary goal of natural selection |
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| Lesson:  Lesson Sequence in Classroom  Before Game:   1. Warm-up questions on Google Form 2. Lecture- Choose your preferred lecture method to discuss biodiversity, natural selection, and evolution.    1. Note: students must have background knowledge of evolution and natural selection   Set Up in Class:   1. Introduce the game to students    1. Get Chromebooks/computers out 2. Have students play through individual play 3. Once students show you the certificate of completion 4. The teacher will choose niches for group play and display the code on screen 5. Students will join the code and will create an organism 6. Students will then play through selected niches, and teachers will help instruct students to write if their organism won and lost and explain why they believe they lost or won.    1. The teacher will then discuss why the organisms won or lost. 7. Teachers can repeat steps 4 through 6 as often as they want 8. Exit Ticket: Google Form |
| Closing/ticket to leave (5 min)  \*Located on the Simulation page in Educator Resource Section   * Students will answer Google Form.   + Will answer the question     - How does natural selection allow the animals in the habitats to survive?     - Describe one habitat discussed today and write about how the character state of the organisms helped the animal survive in that habitat? |
| Reflection:  How did this lesson work for you?  How can you use this lesson in the future? |