Lesson title: Ecosystems and Adaptations with AI Image Generator

Grade(s): 9-12

Subject Area(s): Biology

Utah standard(s) addressed with this lesson:
Standard BIO.4.3
Analyze and interpret data to identify patterns that explain the claim that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. Emphasize analyzing shifts in the numerical distribution of traits and using these shifts as evidence to support explanations. (LS4.B, LS4.C)

Learning objectives: Students will be able to identify adaptations that would benefit a species in a given ecosystem and be able to specify how those traits help that organism be reproductively successful.

Safety concerns to be aware of for this lesson: None

Key words and vocabulary:

- Ecosystem
- Adaptations
- Carnivore
- Herbivore
- Omnivore
- Image Generator
- AI Prompt

Lesson budget and materials list:

Item	Cost	Website	Quantity	Total Item Cost
Computer with internet access				
Worksheet	**$0**	**https://docs.google.com/document/d/1fWDD98smdurayKwLbnC-stoAZHEOoW9Y4RbXWsZQ3xY/edit?usp=sharing**	**Total # of students**	**$0**
AI Image Generator		**Examples: Canva, Adobe, Gemini, etc.**		
Google Form	**$0**	**https://docs.google.com/forms/**	**1 per**	**$0**

Example		**d/e/1FAIpQLSdsZWeOYF2W0gS22pMgLL1yagu8wWGzViQhhoOHyX9HLOvt5w/viewform?usp=dialog**	**class to separate final photos**	

Lesson instructions (including pre-lesson activities):

Pre-Lesson/Information needed:

Worksheet can be completed digitally or printer.

Students will need to know the definition of adaptation, ecosystem, and understand heredity in that traits from the parents will be passed onto their offspring.

Lesson Instructions: (50 minute class)

Bell Ringer: (5 minutes)

How do traits get passed from one generation to the next?

Have students discuss and reflect on genetics and heredity and how traits are passed from one generation to the next.

Introduction: (10 minutes)

Define what an adaptation is and how the ecosystem affects what adaptations are successful. Show a photo of an example of an ecosystem and ask students to list different adaptations that organisms might have in order to survive.

Worksheet and AI Image generation: (15 minutes)

Students will select an ecosystem from a list and answer the questions based on their knowledge on what traits they believe will be the most successful.

After completing the worksheet, students will use their answers to create a prompt to input into an AI image generator to create an organism that is not currently in existence. They can adjust or resubmit their prompt multiple times until they get an image they are happy with.

Student submission of images in online submission (examples: Canvas, Google Form): (2 minutes)

Students will download and submit the image of their organism on a Google Doc in Canvas.

Class reflection: (10 minutes)

After all photos have been submitted, the teacher will pick 2 or 3 (depending on time) to show to the class. The class will then try to figure out what ecosystem based on that organisms adaptations it was meant to survive in.

Final assessment (7 minutes)

At the end of class students will answer an open-ended question at the bottom of their worksheet reflecting on how certain adaptations help an animal with survival and reproduction.

Assessment:

Final Reflection Question: Have students respond with a minimum of 3 sentences sighting examples from the images their class created.

Question: After creating your image and observing some of your classmates' organisms, how does having specific adaptations help an organism survive and pass on those traits to the next generation?

Other resources (powerpoints, worksheets, websites, video links, etc.):

1. Google Form or some way for students to submit their AI images so that the teacher can put them up on the screen.
2. Worksheet

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