

Teacher Suggestions For Lesson Plan Adaptations

Overall Suggestions from Teachers

- For students who may have experienced trauma: Rather than emphasizing that the characters had traumatic lives, focus instead on the relationships between the book characters and/or between Singer and Dublin.
- To expand on the parts of the lesson plans related to perception and senses: Connect these ideas to social/emotional learning and empathy.
- To expand on any lesson plan content: Use Newsela to find related news articles.

For Days 2 and 3

Explore more senses in-depth, particularly taste. For example:

- Students test their tongues with PTC paper. (Paper strips soaked with PTC, or phenylthiocarbamide, are perceived as either tasteless or bitter, revealing whether or not the student has the “taster” gene.)
- Students do a creative writing assignment about how a dill pickle or sweet pickle tastes, crunches, etc.

For Days 8 and 9

- Show videos or other resources about animal exoskeletons and how these exoskeletons provide strength.
- Show videos or other resources about super-strong insects to explore exoskeletons and strength.

For Day 10

- Use the “Design a Critter” and “Build a Critter” activities on beyondthechalkboard.com to extend the animal design activity.
- Play the “Oh, Deer!” game from Project Wild to get kids thinking more deeply about animals’ needs for shelter, water, and food. This game can also include graphing data about animal populations.

Bonus Resources

Human Senses: Vision and Color

This news video describes a woman with “super color vision”:

<https://www.youtube.com/watch?v=QjocalycuiQ>

This video shows how engineers are working on technology to help people with visual impairments:

<https://mass.pbslearningmedia.org/resource/sight-vision-science-video-braincraft-1048/re-engineering-sight-braincraft/#.WzFDKhJKjOQ>

This video describes what colors are:

<https://mass.pbslearningmedia.org/resource/color-physicsgirl-video-1026/what-is-color-physics-girl/#.WzFDkBJKjOR>

This video provides an explanation of color for younger students:

<https://www.youtube.com/watch?v=bcVr13Fw7w8>

This is an interesting video/activity about visualization and perception:

<https://www.youtube.com/watch?v=pLgozQ7J-gQ>

The first 7.5 minutes of this Bill Nye episode provide great explanations of color:

<https://www.youtube.com/watch?v=QuL3xQR1Shw>

Human Senses: Taste

This activity explores the interaction between taste and scent:

<http://pbskids.org/zoom/activities/sci/tastevsmell.html>

This video provides a lot of information about taste, including how taste interacts with sound, smell, and touch:

<https://mass.pbslearningmedia.org/resource/nvsn6.sci.bio.flavor/the-science-of-flavor/#.WzFEtBJKjOQ>

This video also explores the interaction of taste and sound:

<https://mass.pbslearningmedia.org/resource/taste-ears-braincraft/taste-ears-braincraft/#.WzFFGxJKjOQ>

This activity explores taste and sweetness:

http://www-tc.pbs.org/thebotanyofdesire/pdf/Botany_of_Desire_Lesson_Plan_Sweetness.pdf

A video about “supertasters”--people with more taste buds!

<https://mass.pbslearningmedia.org/resource/nvsn6.sci.bio.taster/what-is-a-supertaster/#.WzFFVhJKjOQ>

Human Senses: Sound

This video explores why certain sounds make people want to vomit:

https://www.youtube.com/watch?v=QU5k_s2PQ_o

This video looks at how sound and vision interact:

<https://www.youtube.com/watch?v=aaz-t4lY9Zs>

Human Senses: New Senses

This video explores an engineer’s work on creating new human senses (like a twitter feed!):

<https://www.youtube.com/watch?v=J3xFAb0p8x8>

This audio clip (and accompanying article) talks creating new human senses:

<http://www.pbs.org/wgbh/nova/tech/engineering-senses.html>

Animal Senses

This video considers how animals see the world:

<https://www.youtube.com/watch?v=z4rxinelFFE>

This video explores how some animals can see in the dark:

<https://ed.ted.com/lessons/how-do-animals-see-in-the-dark-anna-stockl#review>

Animal Camouflage and Prosthetics

This video looks at how sharks can camouflage themselves:

<https://mass.pbslearningmedia.org/resource/nat16.sci.lisci.countershade/animal-adaptations-countershading-camouflage-and-great-white-sharks/#.WzFluBJKjOQ>

This video explores how cuttlefish camouflage themselves:

<https://mass.pbslearningmedia.org/resource/nat16.sci.lisci.cuttlefish/camouflaging-cuttlefish/#.WzFJHxJKjOQ>

This video is about underwater camouflage:

<https://mass.pbslearningmedia.org/resource/creatures-of-the-lembeh-strait/creatures-of-the-lembeh-strait/#.WzFJTxJKjOQ>

This video shows how some animals can regrow limbs:

<https://www.youtube.com/watch?v=QFa6jP6WgzM>

This video explores animal prosthetics:

<https://mass.pbslearningmedia.org/resource/nat14.sci.lifsci.driftwood/driftwood/#.WzFJnxJKjOQ>

This is a longer video talks about how engineers design animal prosthetics:

<https://www.youtube.com/watch?v=BB52mOGxr5A>

Biomimicry

This video looks at how human biology is inspiring human technology in robotics:

<https://mass.pbslearningmedia.org/resource/nvnd-sci-softrobots/wgbh-nova-digital-softer-more-human-robots/#.WzFJyhJKjOR>

This video show human designs based on nature:

<https://www.youtube.com/watch?v=iMtXqTmfta0>

This video looks at more examples of biomimicry (NOTE: there is an obscure reference to a plant's "splash cup," which is also a drinking game):

<https://www.youtube.com/watch?v=4vq8ci4RTUs>

This great Amazon Prime series includes an episode called "Mastering the Mimicry":

https://www.amazon.com/Mastering-the-Mimicry/dp/B01LYDT025/ref=sr_1_2?s=instant-video&ie=UTF8&qid=1525728269&sr=1-2&keywords=biomimicry

This TED-Ed talk provides examples of animal and human construction:

<https://ed.ted.com/featured/ZYLdBoJY>

Some animals are bioluminescent--which is inspiring new technologies:

<https://ed.ted.com/lessons/the-brilliance-of-bioluminescence-leslie-kenna>

This TED-Ed talk features bio-inspired architecture:

<https://ed.ted.com/lessons/building-the-seed-cathedral-thomas-heatherwick#review>

In this video, octopi are the inspiration for robots:

<https://www.youtube.com/watch?v=0hmuHqXBHw0>

This activity is about bio-inspired robotic arms:

https://d43fweuh3sg51.cloudfront.net/media/media_files/nvmms_doc_roboarm.pdf

“Super” Suits

The possibility of a Batman suit is explored in this video:

https://www.youtube.com/watch?v=CVbqzeID_Hs

Materials (General)

Testing strength (activity):

<https://mass.pbslearningmedia.org/resource/nvms-sci-strongeract/making-stuff-stronger-activity/>

Testing strength/toughness (activity):

https://d43fweuh3sg51.cloudfront.net/media/media_files/BreakingPointr.pdf

Fun facts about materials (article):

<https://mass.pbslearningmedia.org/resource/arct14.sci.nvworldstr/the-worlds-strongest-stuff/#.WzFK1hJKjOQ>

Materials used through history (article):

<https://mass.pbslearningmedia.org/resource/arct14.sci.nvmatchist/materials-that-changed-history/>

Manipulating materials -- changing the properties of plastic (video):

<https://mass.pbslearningmedia.org/resource/619f39de-7691-4efa-956e-ad07386c3517/properties-of-plastic/#.WzFLZBJKjOQ>

Sustainability -- making steel from trash (video):

<https://mass.pbslearningmedia.org/resource/nvtoe-sci-trashsteel/wgbh-nova-treasures-of-the-earth-turning-trash-into-steel/#.WzFL1hJKjOR>

Materials (Specific)

Aerogel (video):

<https://mass.pbslearningmedia.org/resource/fe613344-e8d3-4328-bdfc-0e57c480128d/quest-lab-aerogel-kqed-quest/#.WzFLixJKjOR>

Composites (video: the first 45 seconds provides a nice intro):

<https://mass.pbslearningmedia.org/resource/npe11.sci.engin.design.composites/composite-materials-for-space/#.WzFLRxJKjOQ>

Diamond and graphite -- two forms of carbon (video):

<https://mass.pbslearningmedia.org/resource/nvtoe-sci-diagraph/wgbh-nova-treasures-of-the-earth-molecular-structures-of-diamond-and-graphite/>

Metal foam (video):

<https://mass.pbslearningmedia.org/resource/nvtoe-sci-metalfoam/wgbh-nova-treasures-of-the-earth-what-is-metal-foam/>

Metals - with a section on Samurai swords (article):

<http://www.pbs.org/wgbh/nova/tech/metal-fundamentals.html>

Mushrooms -- a material of the future (video):

<https://mass.pbslearningmedia.org/resource/eb534700-12aa-4687-b42e-100cec52d92b/httpwww.wsciencefridaycomvideosthe-fungi-in-your-future/>

Shape-memory alloys and polymers (video):

<https://mass.pbslearningmedia.org/resource/nvms.sci.materials.smarterdemo/shape-shifters-shape-memory-alloys-and-polymers/#.WzFKbxJKjOQ>

Spider silk (video):

<https://mass.pbslearningmedia.org/resource/5bf08b8e-dc9d-4773-b228-257c4b3b4c26/spider-silknc-science-now/#.WzFU1hJKjOR>

Spider silk (video):

<https://mass.pbslearningmedia.org/resource/3d7906da-55eb-4a1d-ac5b-8f35ee1227b3/stealing-the-secrets-of-spider-silk/#.WzFVHhJKjOR>

Scientist/Engineer Profiles

Materials engineer:

<https://mass.pbslearningmedia.org/resource/mss13.sci.engin.design.mateng/erick-ordonez-materials-engineer/#.WzJEmBJKjOQ>

Materials scientist:

<https://mass.pbslearningmedia.org/resource/04287b5c-f0bb-48e0-b75b-d03a7738d2a8/dr-bernadette-a-hernandez-sanchez/#.WzJEDhJKjOQ>

Materials scientist:

<https://mass.pbslearningmedia.org/resource/ec7d177d-bdc4-40dd-a2ce-1604c263c851/dr-blythe-g-clark/#.WzJERBJKjOQ>

Design

This video has some swearing at the beginning and end, but it's an interesting look at good versus bad engineering design:

<https://www.youtube.com/watch?v=yY96hTb8Wgl>