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| **Grade:** 1 | **Subject:** Science – Animal Adaptations |
| **Materials:** Various animal nonfiction books, Super Animals Sheet | **Technology Needed:** Laptop, ActiveBoard |
| **Instructional Strategies:*** Direct instruction
* Guided practice
* Socratic Seminar
* Learning Centers
* Lecture
* Technology integration
* Other (list)
 | * Peer teaching/collaboration/

cooperative learning* Visuals/Graphic organizers
* PBL
* Discussion/Debate
* Modeling
 | **Guided Practices and Concrete Application:** |
| * Large group activity
* Independent activity
* Pairing/collaboration
* Simulations/Scenarios
* Other (list)

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| Explain: |

 | * Hands-on
* Technology integration
* Imitation/Repeat/Mimic
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| **Standard(s): NGSS: 1-LS1-1**: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. | **Differentiation****Below Proficiency:** Focus on features of common animals and or/ two-three animal parts(provide a list and pictures of animals)**Above Proficiency:** Challenge students to create a super animal with powers and features from six different animals and/or write about how and why it would use each part**Approaching/Emerging Proficiency:** Focus on creating a super animal with powers and features that are inspired by animal adaptations. **Modalities/Learning Preferences:** Auditory/Visual/Tactile |
| **Objective(s):** By the end of the lesson, students will utilize biomimicry techniques to create a super animal with powers and features that are inspired by animal adaptations. **Bloom’s Taxonomy Cognitive Level:** Utilize |
| **Classroom Management- (grouping(s), movement/transitions, etc.)**Students will sit on star spots during the engagement and explain parts of the lesson. Students will return to desks to work on Super Animals sheet when I dismiss them by colorsStudents will line up for lunch when I call out their choice (cold, grab and go, hot) | **Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)**Whole group expectations: Criss-cross legs, sit on their assigned star spot on carpetWorksheet expectations: work at desk primarily, but can move to a spot in the room where they work better |
| **Minutes**  |  **Procedures** |
|  | **Set-up/Prep:** * Gather all of the nonfiction books about animals in the classroom library and set them on the ledge under the ActiveBoard
* Open up links before the lesson
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| **2** | **Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)*** Introduce the lesson playing the story *What Do You Do With a Tail Like This?* by Steve Jenkins and Robin Page on YouTube: <https://www.youtube.com/watch?v=1ARuoc_mrs4>
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| **10** | **Explain: (concepts, procedures, vocabulary, etc.)*** Explain that people can be inspired by parts of different animals. These features can give ideas to engineers for creating or improving inventions. Some examples of this are:
	+ The mounds that termites make for their homes help engineers design new air conditioning systems.
	+ Understanding grassland ecosystems helps farmers grow food more carefully.
	+ Mosquito mouth parts help scientists create less painful needles.
* Each part of an animal helps it survive.
	+ Make a chart on the whiteboard.
	+ Model and write that feet allow animal to move
	+ Ask students for more examples (tail, fur, shell, eyes, etc.)
* Using the projector as a class, visit the PBS Kids Website for Wild Kratts and find the Power Suit Maker game. [http://pbskids.org/wildkratts/games/power­suit­maker/](http://pbskids.org/wildkratts/games/power%C2%ADsuit%C2%ADmaker/)
* Challenge Mode, follow instructions to build a few power suits.
	+ Read the clues out loud and call on students to decide which animal part to use.
	+ Discuss the different features and how they help the animal and the Kratt brother.
* Moving to Experiment Mode, allow children to play with different combinations for each body part. Have them pay attention to the feedback that Aviva gives them about the advantages of each part.
* Ask students what kinds of animal features they can use and make a list on the active board.
	+ Turtle shell
	+ Cheetah camo
	+ Shake rattle
	+ Duck head
	+ Bird feet
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| **20** | **Explore: (independent, concreate practice/application with relevant learning task -connections from content to real-life experiences,** **reflective questions- probing or clarifying questions)** * Tell students they will be creating their own Super Animal.
* Show them the Super Animal Sheet and tell them they need to write their name, the name of their Super Animal, draw and label their super animal using body parts from different animals, and write what the animal parts are used for.
* Ask two students to hand out the Super Animal sheet and dismiss students to their desks to work (or wherever they choose to work around the room) by pod
* Have each individual student build (draw) their own Super Animal on the Super Animal sheet
	+ They may use crayons, colored pencils, markers, and/or pencils
* Monitor students to ensure that each student is considering actual animal adaptations and not superpowers based on fantasy (such as x­ray vision).
* If students are not sure where to start or get stuck, direct them to look for more ideas in the books they have available.
* Ask questions such as:
	+ Why did you choose these parts for your superhero's suit?
	+ How do these parts help your superhero?
	+ What makes these parts better than ones found on other animals?
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| **3** | **Review (wrap up and transition to next activity):*** At 11, ask Patience to ring the chimes, signaling students to clean up and sit at their star spots.
* Have students share their Super Animals one-by-one and prompt the students if necessary:
	+ Why did you choose these parts for your superhero's suit?
	+ How do these parts help your superhero?
	+ What makes these parts better than ones found on other animals?
* If time permits, lead a class discussion about what the class thought were the best or most interesting animal superhero powers. They should also think about the challenges of building designs that use animal parts.
* Dismiss student with cold lunch to get their lunchboxes and line up for lunch
* Dismiss students having grab and go
* Dismiss students having hot lunch
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| **Formative Assessment: (linked to objectives)** **Progress monitoring throughout lesson- clarifying questions, check-**  **in strategies, etc.*** Monitor students to ensure that each student is considering actual animal adaptations and not superpowers based on fantasy (such as x­ray vision).
* If students are not sure where to start or get stuck, direct them to look for more ideas in the books they have available.
* Ask questions such as:
	+ Why did you choose these parts for your superhero's suit?
	+ How do these parts help your superhero?
	+ What makes these parts better than ones found on other animals?

 **Consideration for Back-up Plan:** Have students draw a mix of two animals (less parts to consider and draw) | **Summative Assessment (linked back to objectives)** **End of lesson:** Students will create a super animal with powers and features that are inspired by animal adaptations. **If applicable- overall unit, chapter, concept, etc.:** Later in the year, Mrs. Brilz will teach this standard again and connect to this lesson.  |
| **Reflection (What went well? What did the students learn? How do you know? What changes would you make?):**This lesson was very difficult to plan. First grade has not started science yet because they are focusing on math, reading, writing, and reading placements before starting science and social studies curriculum. They also do not have much for science and social studies curriculum, so there was not much to go on getting started. I knew I wanted to do some sort of activity so it was not just a lecture, but it was extremely difficult to find a lesson that they could do with little to no prior knowledge to build upon. At first when I said that we would be learning about animal parts today, Surri said “that’s boring.” Yet, as soon as I started playing the book they were instantly engaged. They loved discussing what different animal parts did and how each animal uses that part for a different purpose. We ended up having to do half of the video after recess because everyone was so engaged talking about the book. They loved doing the PBS KIDS activity of building their own super animal. I had each student choose a different part for the animal. I wish I could have broken this into several lessons and had each student explore the Kratt Brothers building animals on their own computer after doing it as a class. We ran out of time, so we could not do as many examples as I wish we could have. One thing I did not anticipate was Ace’s high anxiety about creating his own super animal. He started almost crying because he did not think he could do it, partially because he is such a perfectionist. On the fly, I let them choose between doing the activity by themselves as I had planned or with a partner. The choices ended up being about half and half! Mrs. Brilz helped calm Ace down and he ended up working with Chris and they did a great job! A lot of students followed my suggestion of using the nonfiction animal books for ideas for parts and how to draw them. Only one pair did not work very well. One student did all of the work and the other girl only added two parts. I tried to monitor them closely so she could add more. After they got started, every student was very engaged (except for Jayden who likes to be defiant) and was upset that it was time to go to lunch so soon! Mrs. Brilz like this lesson so much she plans on keeping it and using it in the future.  |