Subject: Science Grade: 6 Unit #: 2 Title: Animals in Action

UNIT OVERVIEW

STAGE ONE: Identify Desired Results

Established Goals/Standards

Standard 1-Mathematical Analysis

M2.1, M2.1b

Scientific Inquiry

S1.1, S1.1c

S1.2, S1.2a, S1.2c

S1.3

S1.4

S2.1, S2.1c, S2.1d

S2.2, S2.2b, S2.2e

S2.3, S2.3b, S2.3c

S3.1, S3.1a

S3.2, S3.2a, S3.2c, S3.2d, S3.2e, S3.2f, S3.2g, S3.2h

S3.3

Engineering Design

T1.1 a

T1.3, a, b

T1.4 a, b

T1.5 a, b

Standard 2: Information Systems

1.4b, c

Standard 2: Models

2.1, 2.2

Standard 2: Optimization

6.1

Standard 7: Interdisciplinary Problem Solving

1.1, 1.3, 1.4

Long-Term Transfer Goal

At the end of this unit, students will use what they have learned to independently…

- *Work together and share findings*
- *Refine ideas and build on other's ideas*
- *Keep clear accurate and descriptive records*
- *Use tables as a way to communicate results*
- *Differentiate between observations and interpretations*
- *Make claims based on evidence*
- *Use models to simulate processes*
- *Define criteria and constraints*

Meaning

Enduring Understandings

Students will understand that…

- *Behavior is a type of response to internal or external stimulus*
- *The structure and function of animals' bodies are complementary and affect behavior*
- *Organisms need to grow, reproduce, and maintain their bodies*
- *Studying the work of different scientists provides understanding of scientific inquiry and that science is a human endeavor*
- *Observations and measurements are considered reliable if the results are repeatable by other scientists using the same procedure*

Essential Questions

Students will consider such questions as…

How do scientists answer big questions and solve big problems?

Acquisition

What knowledge will students learn as part of this unit?

- *Animals' sense of sight is adapted to their environment*
- *To see an object, light reflected from the object must enter the eye*
- *White light is composed of all the colors of the rainbow*
- *Flowers are reproductive organs of the plants, as well as food suppliers for many animals*
- *Animals' bodies have similarities to simple machines*
- *Animals communicate with other animals using sound*
- *Vibrations of molecules produce sound*

What skills will students learn as part of this unit?

- *When another person's or group's idea is used, credit needs to be given*
- *Keeping good records*
- *Careful observation*
- *Finding trends in data*
- *Collecting observational data*
- *Using evidence to support claims*
- *Collaboration*
- *Explanation*
- *Iteration*
- *Reliable data*

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	Standard 4: Process skills 4, 7, 8 Standard 4: LE 1.1f, 1.2a, 1.2g, 4.1c, 4.1d, 4.2b, 5.1g	• *Sound is compression waves that can be described by amplitude, frequency and wavelength* • *Sound moves differently through different matter* • *Animals' ears are adapted to hearing sounds in their environment*	• *Interpretation* • *Building on the work of others* • *Models and simulations* • *Verbal and non-verbal communication* •

STAGE TWO: Determine Acceptable Evidence	
	Assessment Evidence
Criteria for to assess understanding: *(This is used to build the scoring tool.)* • *Rubric* • *Answer Key*	Performance Task focused on Transfer: • Project board
	Other Assessment Evidence: • Science Notebooks • Group Interaction • Noticing/Wondering Chart • Data collection • Create your explanation BLM • Teacher observation • Solution Briefing Notes BLM • Reflection questions • Poster/Solution Showcase • Quizzes • Unit Test

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T, M, A *(Code for Transfer, Meaning Making and Acquisition)*	**STAGE THREE: Plan Learning Experiences**	
	Learning Events:	Evidence of learning: *(formative assessment)*
M	• Students introduce to the Unit, learning that they will explore how scientists answer big questions and solve problems in the context of why animals behavior.	
M	• Students are introduced to the work of ethologists as they observe a group of three middle-school students and gather data on their behavior.	
A	• Students plan a better observation procedure and observe another group of three students using their new observation procedure and focusing on more details.	
M	• Students observe pictures of animals and interpret their behaviors. Analysis of data reinforces their understanding of interpretation and observations, while emphasizing the difficulty of interpreting animal behavior.	
M	• Students are introduced to scientific explanation and the importance of its components as they create their own about animal behavior.	
M	• Students read about the kinds of animal behavior, the influence of food on their survival, how animals protect themselves and reproduce, and gaining science knowledge to support their explanations.	
M	• The concept of iteration is introduced as students observe another group of students using what they learned about improved observations and data collection.	
M	• The class watches a short video of chimpanzees feeding and discusses how they live, eat, and get food. Using the ideas they discuss, students develop questions about the feeding behaviors of animals.	
A	• Students construct observation plans to make careful and detail observations of feeding behaviors. They watch the Chimpanzees video again, this time, using their observation procedures and then sharing their data in an Investigation Expo.	
M	• Students are introduced to the work of Jane Goodall and read how careful observations allowed her to answer questions on how chimpanzees feed. Looking at the work of Goodall enforces scientific practice to students. The reading gives students science knowledge to use to support their explanations of animal behavior.	
M	• Students learn that bees are foragers like chimpanzees, but are also herbivores, unlike the chimpanzees. From a nectar-collecting model, students use flower cards to simulate bee foraging.	
A	• Students perform a more in-depth simulation of bee foraging. They learn how bees' sight has been adapted to be sensitive to certain colors and ultraviolet light.	
M	• Students learn how bees and flowers have adaptations that make it possible for bees to gather nectar and flowers to attract bees for pollination. After reading how some flowers are wind pollinating, they dissect a flower to better understand its anatomy.	
M	• Students read about large carnivorous predators and why their bodies must work like a well-designed machine to give them energy and capture food. To better understand the feeding behaviors of carnivores, they observe videos of hunting styles and the animals that use each. They then read about the science of how certain animals have adapted to hunt.	
M	• Students are introduced to recommendations as an important part of the scientific process and prepare their own to use for the Big Challenge.	
M	• Students list different ways humans communicate, noting when and why people use each way. They categorize the ways humans communicate as they begin thinking about what affects communication and its purposes.	
M	• Students explore human communications. In a puzzle solving activity, students study verbal and nonverbal communication and then share their observations and interpretations in an Investigation Expo.	
M	• Watching a video of the waggle dance, students observe how bees communicate while foraging.	
	• Students learn about communication between elephants through video observation. They watch the video once, design an observation procedure,	

A A A M T T	watch the video again, and then analyze their data that they share in an Investigation Expo. • Students read about the science of elephant communication, giving them science knowledge to use as they make claims about animal behavior. • Students observe the communication behavior of dolphins and develop explanations of how dolphins communicate. • Students read about how dolphins use echolocation and have signature whistles that allow them to identify one another and find each other, and communicate visually and by touch, as well as with sound. • Students consider the question of the Big Challenge and how they will incorporate what they have learned to design an enclosure similar to an animal's habitat. • Students apply the concepts learned in this Unit as they construct design plans for a zoo enclosure. Students think about their work throughout the Unit, acting as ethologists to answer the Big Question, How do scientists work together to solve problems?	